SONY

DIGITAL VIDEOCASSETTE RECORDER

DNW-A25
DNW-A25P

BETACAM SX

MAINTENANCE MANUAL Part 1

1st Edition

Serial No. 10001 and Higher (DNW-A25)

Serial No. 40001 and Higher (DNW-A25P)

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual part1 of digital videocassette recorder DNW-A25/A25P.

This manual is intended for use by trained system and service engineers, and provides the setting and maintenance information necessary at the time of primary service.

Contents

This manual is organized by following sections.

Section 1 Service Overview
Explains fundamental area of the information that is required to service, (removal of cabinet and cassette compartment, the functions of printed circuit board, the locations of main part, fixture and measuring equipment information, notes, etc.) and the measures against trouble.

Section 2 Error Message
Explains the error messages.

Section 3 Maintenance Mode
Explains each menu of the maintenance mode.

Section 4 Periodic Maintenance and Inspection
Explains the recommended periodic maintenance, and the cleaning procedure.

Section 5 Spare Parts
Describes the spare parts list and the exploded view for the service parts of this unit, and the packing materials and supplied accessories list.

Section 6 Overall Block Diagram and Circuit Description
Describes the overall block diagram and the ciruit description.

Appendix A Setting Check Sheet
The sheet is used for checking the setup conditions such as switch, setup menu under the application.

Related manuals

Besides this “maintenance manual part 1”, the following manuals are available for digital videocassette recorder DNW-A25/A25P.

- **Operation Manual (Supplied with the DNW-A25/A25P.)**
  This manual is necessary for application and operation of the DNW-A25/A25P.

- **Maintenance Manual Part 2 (available on request)**
  This manual describes the information that premises the parts level service (adjustments, board layouts, schematic diagrams, detailed parts list, etc.) for this unit.
  If this manual is required, please contact to Sony’s service organization.

- **Protocol Manual of Remote (9-pin) Connector (soon-to-be-available)**
  This manual explains the protocol for controlling the VTR via the RS-422A (9-pin serial remote).
  If this manual is required, please contact to Sony’s service organization.

- **BKNW-225 Maintenance Manual (Supplied with the BKNW-225)**
  This manual describes the spare parts list and the exploded view for the service parts of the docking kit BKNW-225, that is used when the two DNWs are coupled.

Section 1
Service Overview

1-1. Power Supply

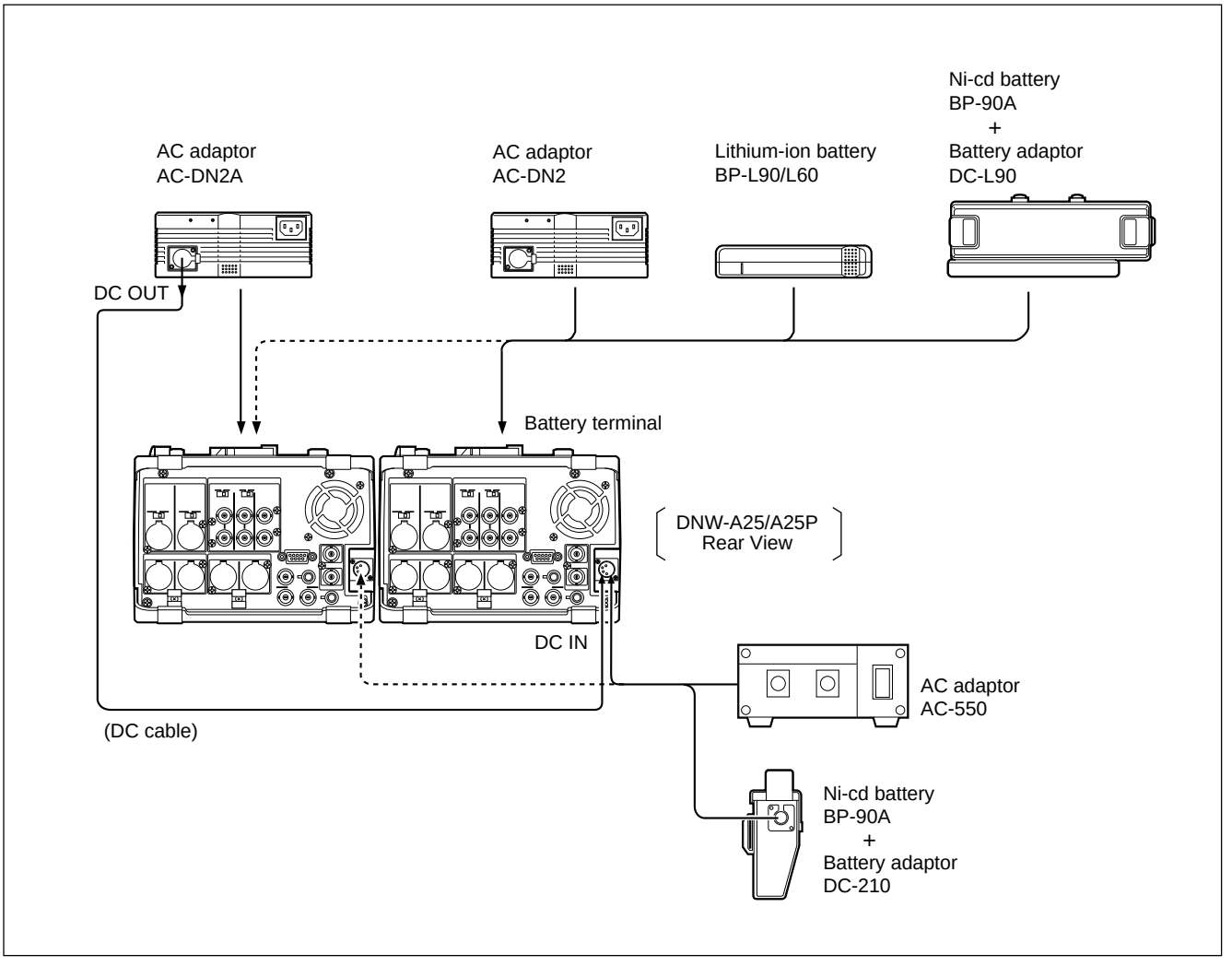
The unit works either on AC current (using the AC adaptor) or battery. When repairing or checking the unit, however, AC-operation is recommended.

Power Voltage: DC 11 to 17 V
Power Consumption : 65 W

Notes

- The AC adaptor AC-DN1 cannot be used to derive power.
- The AC adaptor AC-DN2A can supply power to two VTRs simultaneously. The AC-DN2 with serial No.11001 or higher can supply, too. In this case, power on the VTRs and load cassettes in turn allowing for an inrush current.
- While the unit is battery-operated, the remaining battery capacity is displayed on the sub LCD. When the battery is nearly dead, the WARNING indicator on the side of the LCD monitor will blink. For details, refer to the operation manual supplied with the unit.

Connection example (when operating two VTRs)

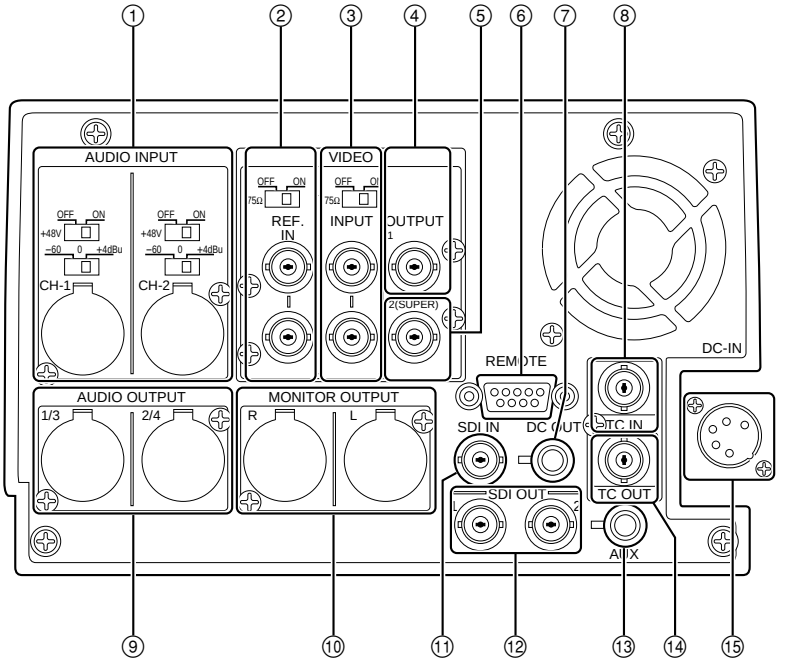


1-2. Connection Connectors/Cables

Connection made with the connector panels during installation or service, should be made with the connectors or complete cable assemblies specified in the following list, or equivalent parts.

Panel indication	Connection connector (Sony P/N)	Connection cable (Sony P/N)
VIDEO REF IN VIDEO INPUT VIDEO OUTPUT TC IN TC OUT	Plug, BNC (1-564-742-11)	RG-59B/U cable
SDI IN SDI OUT	Plug, BNC (1-564-742-11)	BNC coaxial cable (1-783-090-11:supplied with BKNW-225) or BELDEN 8281 cable (Maximum cable length: 200m)
AUDIO INPUT	XLR 3P, MALE (1-508-084-00)	————
AUDIO OUTPUT MONITOR OUTPUT	XLR 3P, FEMALE (1-508-083-00)	————
DC IN	XLR 4P, FEMALE (1-508-362-00)	DC power cord (1-551-577-00:supplied with AC-550/550CE)
DC OUT	Plug 4P MALE (1-566-425-11)	————
REMOTE	Plug 9P MALE (1-560-651-00) Shell, Junction 9P (1-561-749-00)	9P remote control cable (1-783-089-11:supplied with BKNW-225) or RCC-5G(5 m)/10G(10 m)/30G(30 m)
AUX	Plug 6P MALE (1-560-078-00)	————
HEADPHONES	JM-60 stereo phone plug (commercially available)	————

1-3. Connector Input/Output signals



〈 Connector panel 〉

Communications connectors

⑥	REMOTE	D-SUB 9P connector × 1 (RS-422A interface) Remote control
⑬	AUX	6-pin connector × 1

Input connectors

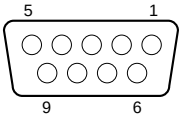
①	AUDIO INPUT CH-1/CH-2	XLR 3-pin ×2 Analog audio 2 channels −60 dBu, 0 dBu, +4 dBu selectable, high impedance, balanced
②	VIDEO REF.IN	BNC ×2 (In loop through connection, with 75 Ω termination switch) External reference video signal (Black burst or composite sync) 40 IRE/0.3 Vp-p, 75 Ω, negative sync
③	VIDEO INPUT	BNC ×2 (In loop through connection, with 75 Ω termination switch) Analog composite video 1.0 Vp-p, 75 Ω, negative sync
⑪	SDI IN	BNC ×1 Component digital (270 Mbit/s) SMPTE 259M/ITU-R BT.656
⑧	TC IN	BNC ×1 Time code 0.5 to 18.0 Vp-p, 10 kΩ, unbalanced
⑮	DC IN	XLR 4-pin ×1 DC +11 to 17 V
	BATTERY IN (on battery sub panel)	5-pin terminal ×1 Lithium-ion battery interface

Output connectors

④	VIDEO OUTPUT 1	BNC ×1 Analog composite video 1.0 Vp-p, 75 Ω, negative sync
⑤	VIDEO OUTPUT 2	BNC ×1 (Character superimpose enabled) Analog composite video 1.0 Vp-p, 75 Ω, negative sync
⑨	AUDIO OUTPUT 1/3, 2/4	XLR 3-pin ×2 Analog audio 2 channels (CH-1/CH-2 or CH-3/CH-4 selectable by sub LCD menu) +4 dBm (standard) (600 Ω load), low impedance, balanced
⑩	MONITOR OUTPUT R/L	XLR 3-pin ×2 Analog audio channel (AUDIO OUTPUT enabled by selecting sub LCD menu) +4 dBm (standard) (600 Ω load), low impedance, balanced
⑫	SDI OUT	BNC ×2 Component digital (270 Mbit/s) SMPTE 259M/ITU-R BT.656
⑭	TC OUT	BNC×1 Time code 1.0 Vp-p ±3 dB (75 Ω load), unbalanced
⑦	DC OUT	4-pin connector ×1 (for BVR-3) DC +12 V (+11 to 17 V), 0.5 A (max)
	HEADPHONES (at the front)	JM-60 stereo phone jack Analog audio up to −20 dBu adjustable (8 Ω load), unbalanced

⑥ REMOTE (9P Female)

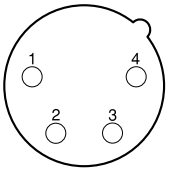
Pin No.	Signal
1	GND
2	RM TX (–)
3	RM RX (–)
4	GND
5	PRIORITY
6	GND
7	RM TX (+)
8	RM RX (+)
9	GND



(External View)

⑮ DC IN (4P Male)

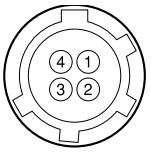
Pin No.	Signal
1	GND
2	NC
3	NC
4	EXT DC



(External View)

⑦ DC OUT (4P Female)

Pin No.	Signal
1	UNREG GND
2	NC
3	NC
4	UNREG +12 V

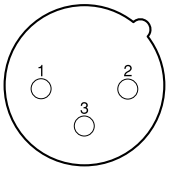


(External View)

① AUDIO INPUT (3P Female)
⑨ AUDIO OUTPUT (3P Male)
⑪ MONITOR OUTPUT (3P Male)

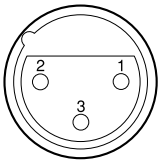
Pin No.	Signal
1	GND
2	X
3	Y

Male



(External View)

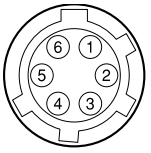
Female



(External View)

⑬ AUX (6P Female)

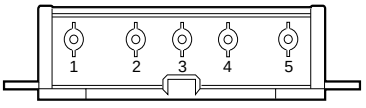
Pin No.	Signal
1	COM RX
2	COM TX
3	REG GND
4	CTS
5	RTS
6	NC



(External View)

BATTERY IN (5P)

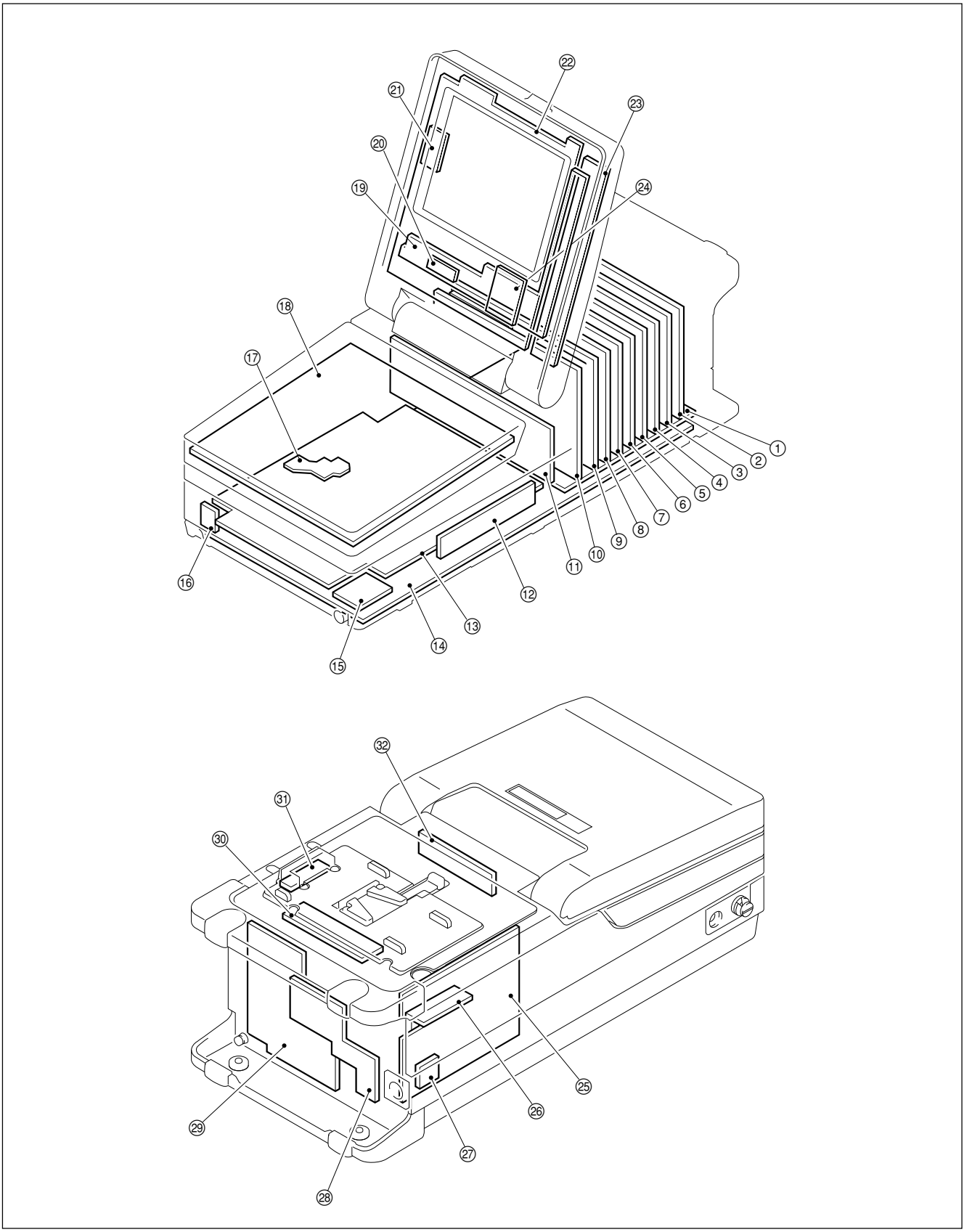
Pin No.	Signal
1	BATT (–)
2	BATT ID DET
3	BATT REM
4	LIGHT CONT
5	BATT (+)



(External View)

1-4. Location of Main Parts and Circuit Function

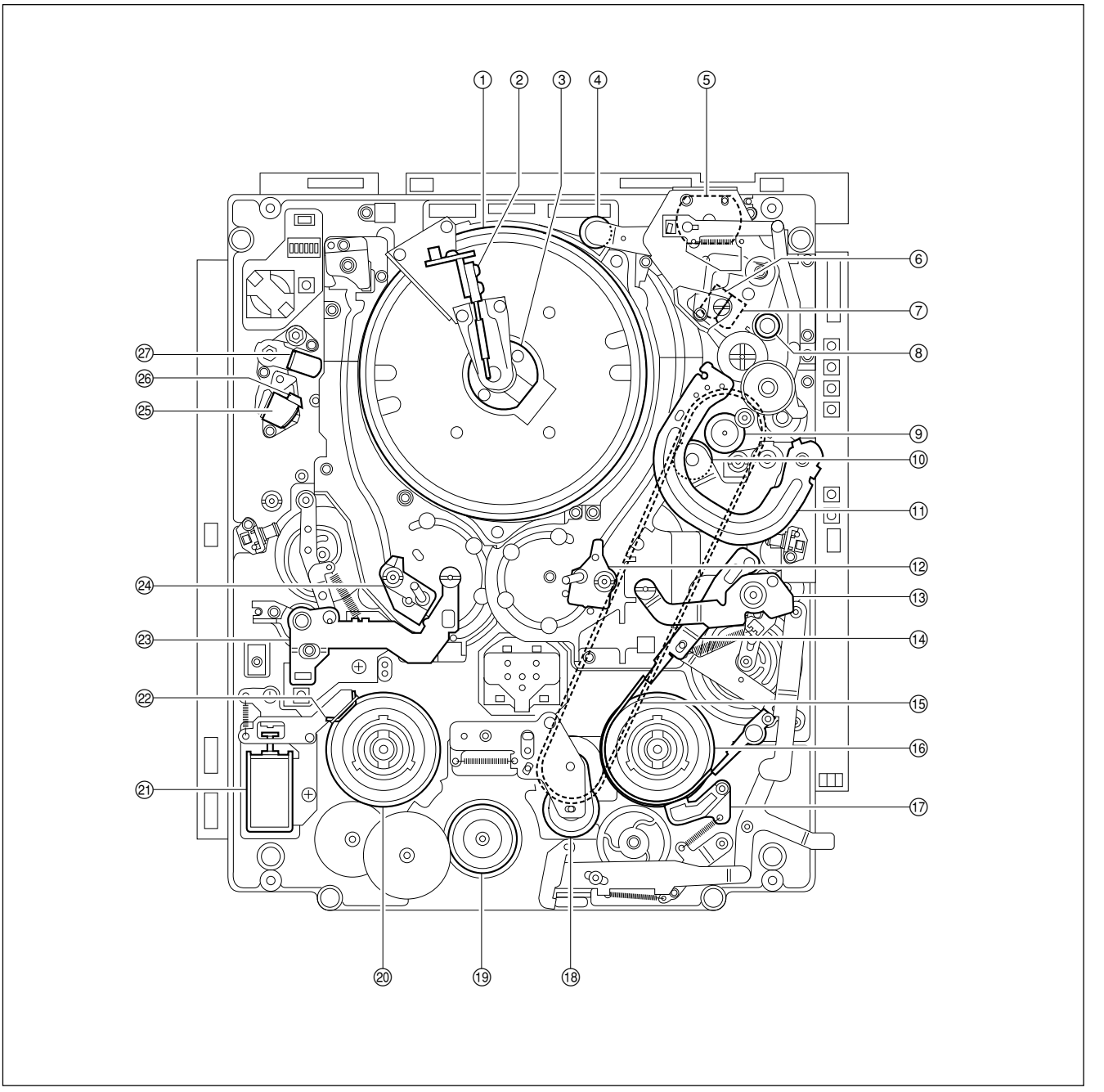
1-4-1. Function and Location of Printed Circuit Boards



System	Board	Circuit Function	Fig.
Digital processing	DPR-87	Digital data processor Video BRR* encoder/decoder, ECC** encoder/decoder(Outer error correction)	⑧
	SDI-23	4:2:2 component serial digital interface	⑤
Video processing	VPR-34	Video signal processor Video process D-A, Composite encoder	⑦
	DEC-97	Analog composite decoder	④
Analog Betacam video PB processing	DM-114 (for DNW-A25) DM-114P (for DNW-A25P)	RF demodulator for analog Betacam PB, TBC***	⑭
Audio processing	APR-27	Audio signal processor	③
	AU-249	Audio A-D (Analog CH1/2 input), Audio D-A (Analog CH1/2 output) Audio D-A (Monitor output)	②
	PA-218	Head amplifier for analog Betacam PB	⑫
RF processing	EQ-72	RF equalizer REC current control, PB EQ, Analog Betacam PB buffer Inner error correction	⑪
Timing generator	TG-191 (for DNW-A25) TG-191P (for DNW-A25P)	Reference timing signal and clock generator	⑥
System control	SY-259	System control (SYS1)	⑩
	SY-260	System control (SYS2)	⑨
Motor driver/sensor	SV-194	Servo control, Motor driver, Sensors	⑬
	SR-65	S tension sensor	⑰
Control panel	KY-400	Control panel function	⑱
display panel	DP-264	display panel control for sub LCD	⑲
	DP-265	display panel control for color LCD	㉒
	DP-277	Audio meter LCD	㉔
	CN-1541	Interconnection board (interconnecting between color LCD and DP-265 board)	㉑
	CN-1657	Interconnection board (interconnecting between sub LCD and DP-264 board)	⑳
	Inverter	Inverter for color LCD	㉓
Connector panel	CP-316	Connector board (AUDIO input/output, MONITOR output)	㉙
	CP-317	Connector board (VIDEO input/output, REF input, TC input/output, REMOTE)	㉘
	DC-97	DC IN connector board	㉗
Power	RE-150	Switching regulator	㉕
	RE-158	Breaker	㉖
Others	MB-757	Mother board	①
	CN-1535	Interconnection board (mainly interconnecting between upper frame and MB-757 board)	㉜
	CN-1662	Interconnection board (interconnecting between FL-251 and RE-150/CN-1535 boards)	㉚
	FL-251	Battery terminal board	㉛
	HP-88	Headphones jack	⑮
	PSW-63	Power switch	⑯

*BRR: Bit Rate Reduction **ECC: Error Correction Coding ***TBC: Time Base Corrector

1-4-2. Location of Main Mechanical Parts



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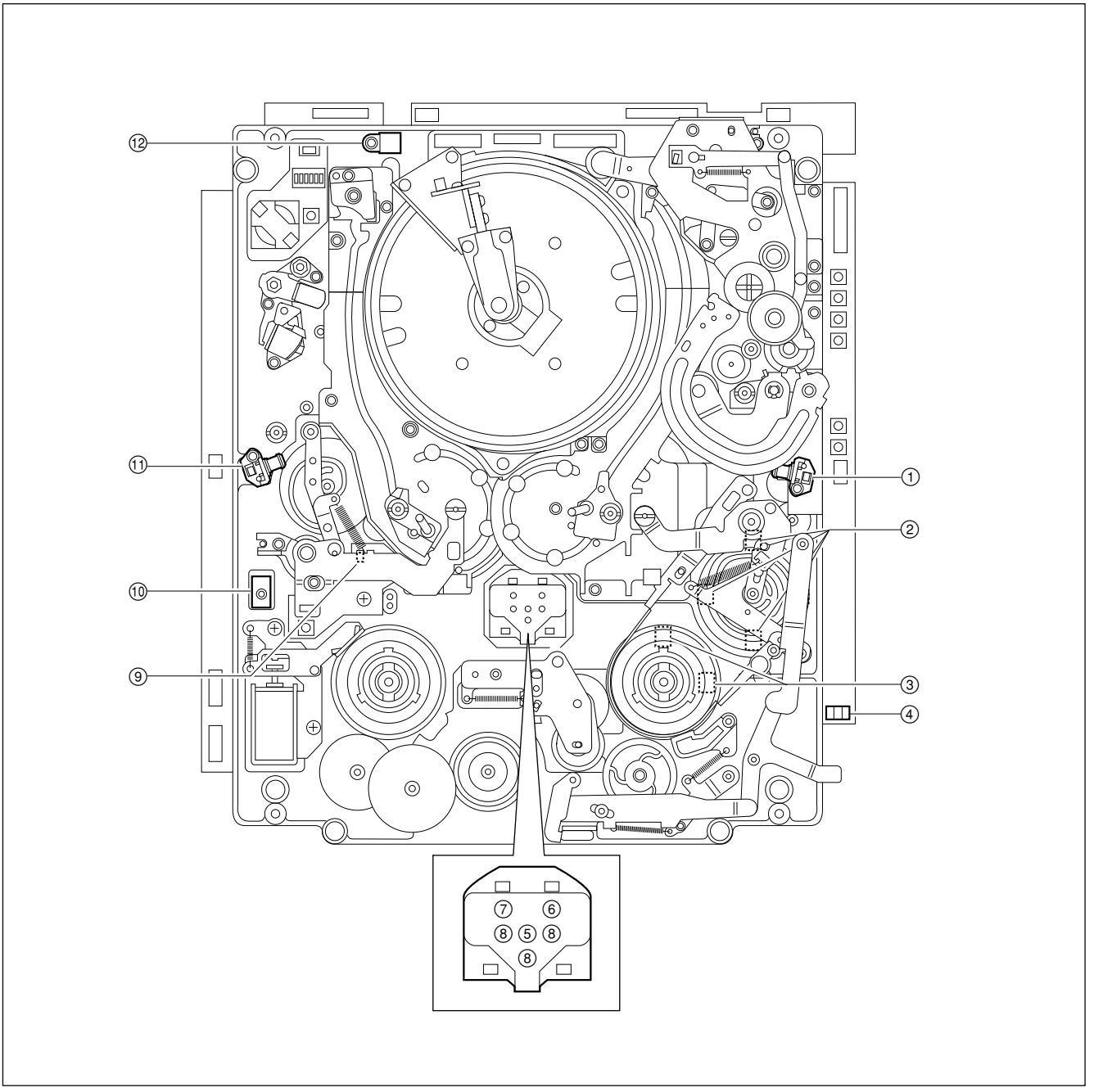
① Drum assembly
② Blush
③ Slip ring
④ Video head cleaner
⑤ Threading motor
⑥ TC erase head
⑦ AT head
⑧ Manual eject knob
⑨ Capstan motor
⑩ Pinch roller
⑪ T drawer arm
⑫ T slider
⑬ T tension regulator arm
⑭ Tension regulator band
⑮ Timing belt (reel)
⑯ T reel table
⑰ T soft brake
⑱ Gear
⑲ S reel motor
⑳ S reel table
㉑ Brake solenoid
㉒ S main brake
㉓ S tension regulator arm
㉔ S slider
㉕ Full erase head
㉖ Tape cleaner
㉗ CTL head

1-4-3. Function and Location of Sensors



① Tape top sensor
Detects the end of the tape running in the reverse direction.

② Function cam sensor
Detects the rotation position of the cam.

③ T reel table FG sensor
Detects the rotation speed of the T reel table. In addition, the sensor output FG is sent to the servo circuit to calculate the diameter of wound tape and to discriminate the abnormality of the T reel table rotation.

④ Cassette compartment lock sensor
Detects whether the cassette compartment is locked or not.

⑤ Oxide/Metal sensor
Detects the metal tape detection tab of a cassette to discriminate whether the tape stored in a Betacam/Betacam SP cassette is an oxide or metal particle tape.

⑥ Tape thickness sensor
Detects the tape thickness detection tab of a cassette to discriminate the thickness of the tape stored in a cassette.

⑦ Reel hub diameter sensor
There are two kinds of hubs (thin or thick in diameter) according to the length of a tape stored in a cassette. This sensor detects the reel hub diameter detection tab of a cassette to discriminate which hub is used in a cassette. The output of the sensor is sent to the servo circuit of the S reel motor to control the reel rotation speed and torque during tape running.

⑧ Cassette classification sensors
Detect the three cassette classification detection tabs of a cassette to discriminate whether an inserted cassette can be used for the unit.

⑨ S tension regulator arm sensor
Detects the position of the S tension regulator arm. The output of the sensor is sent to the S reel motor servo circuit to control the reel torque to keep a constant S tape tension during recording and playback.

⑩ REC inhibit sensor
Detects the state of the REC inhibit plug of a cassette.

⑪ Tape end sensor
Detects the end of the tape running in the forward direction.

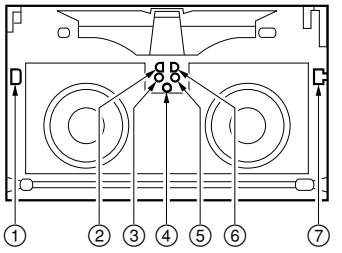
⑫ Condensation sensor
Detects whether the dew condensation occurs in the unit or not.

1-5. System of Cassette

As shown in the figure below, plugs and tabs are provided at the back side of the cassette tape.

Cassette for Betacam SX

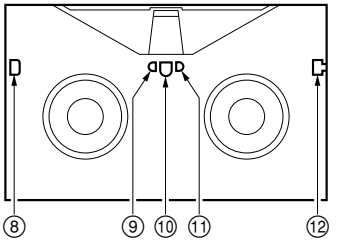
Small cassette (S cassette)

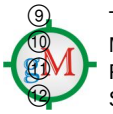


① S cassette analog REC inhibit hole
② Tape thickness detection hole
③④⑤ Cassette classification detection tabs
⑥ Reel hub diameter detection tab
⑦ S cassette digital REC inhibit plug

Cassette for Betacam or Betacam SP

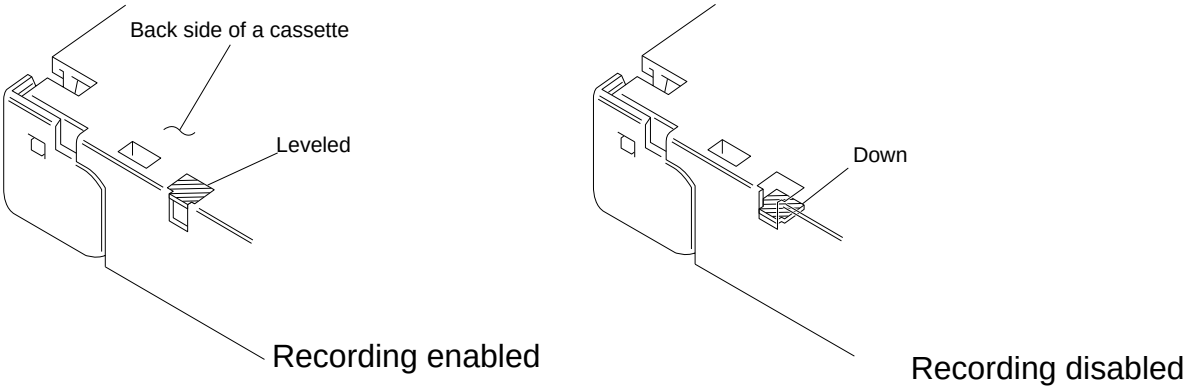
Small cassette (S cassette)





⑧ S cassette REC inhibit tab (for oxide tape)
⑨ Tape thickness detection tab
⑩ Metal tape detection tab
⑪ Reel hub diameter detection tab
⑫ S cassette REC inhibit plug (for metal particle tape)

REC Inhibit Plugs



Detection Tabs

Cassette for Betacam SX

No.	Use	With tab (closed)	Without tab (opened)
②	Tape thickness detection	Thickness: 14.5 µm	Thickness: less than 14.5 µm
⑥	Reel hub diameter detection	Small hub	Large hub
③④⑤	Cassette classification detection	③ is without tab (opened) for Betacam SX cassette. Represents the cassette classification by combination of three tabs. (See below)	

Cassette for Betacam or Betacam SP

No.	Use	With tab (closed)	Without tab (opened)
②	Tape thickness detection	Thickness: 20 µm	Thickness: 15 µm
③	Metal tape detection	Oxide tape	* Metal particle tape
④	Reel hub diameter detection	Small hub	Large hub

* : For the metal particle tape, digital recording can be performed using a Betacam SX format.

Cassette classification detection tabs ○: with tab (closed), ●: without tab (opened)

State of tabs ③ ④ ⑤	Cassette class	Remarks
○○	Betacam or Betacam SP	———
●○	Betacam SX	———
○●	Digital Betacam	Unusable
●●, ○●, ●○, ●●, ●●	Except the above class	Unusable

1-6. Removing/Installing the Cabinet

This section explains the removal and installation procedures for main parts.
For other mechanical parts, refer to the maintenance manual Part 2 Volume 1.

Note

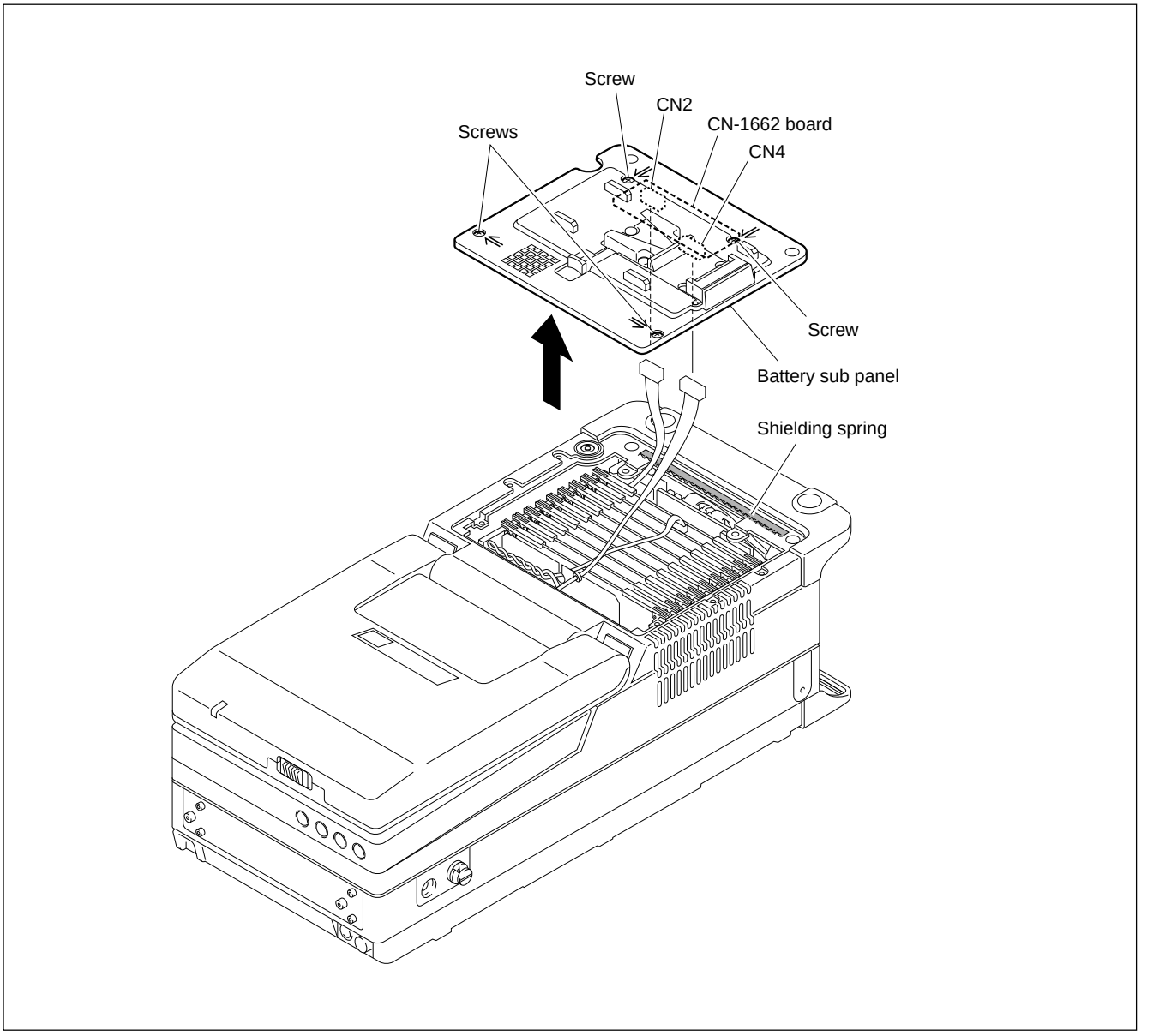
If two VTRs are coupled, remove the handle, joint plates and cables that are docking the VTRs in advance.
As for how to separate, refer to the operation manual supplied with the DNW-A25/25P.

1-6-1. Battery Sub Panel

CAUTION

The unit is equipped with shielding springs which have sharp edges.
Do not touch them with bare hands. Pay careful attention when servicing.

1. Loosen the four screws fully.
   Note
   Each screw is held by a stop washer. Do not separate the washer from the screw when loosening.
2. Disconnect the two connectors (CN2, CN4) on the CN-1662 board.
3. Install the battery sub panel in the reverse order of removal.
   Note
   When installing, take care that the harnesses are not caught between the upper frame and battery sub panel.



1-6-2. Upper Frame

CAUTION

The unit is equipped with shielding springs which have sharp edges.
Do not touch them with bare hands. Pay careful attention when servicing.

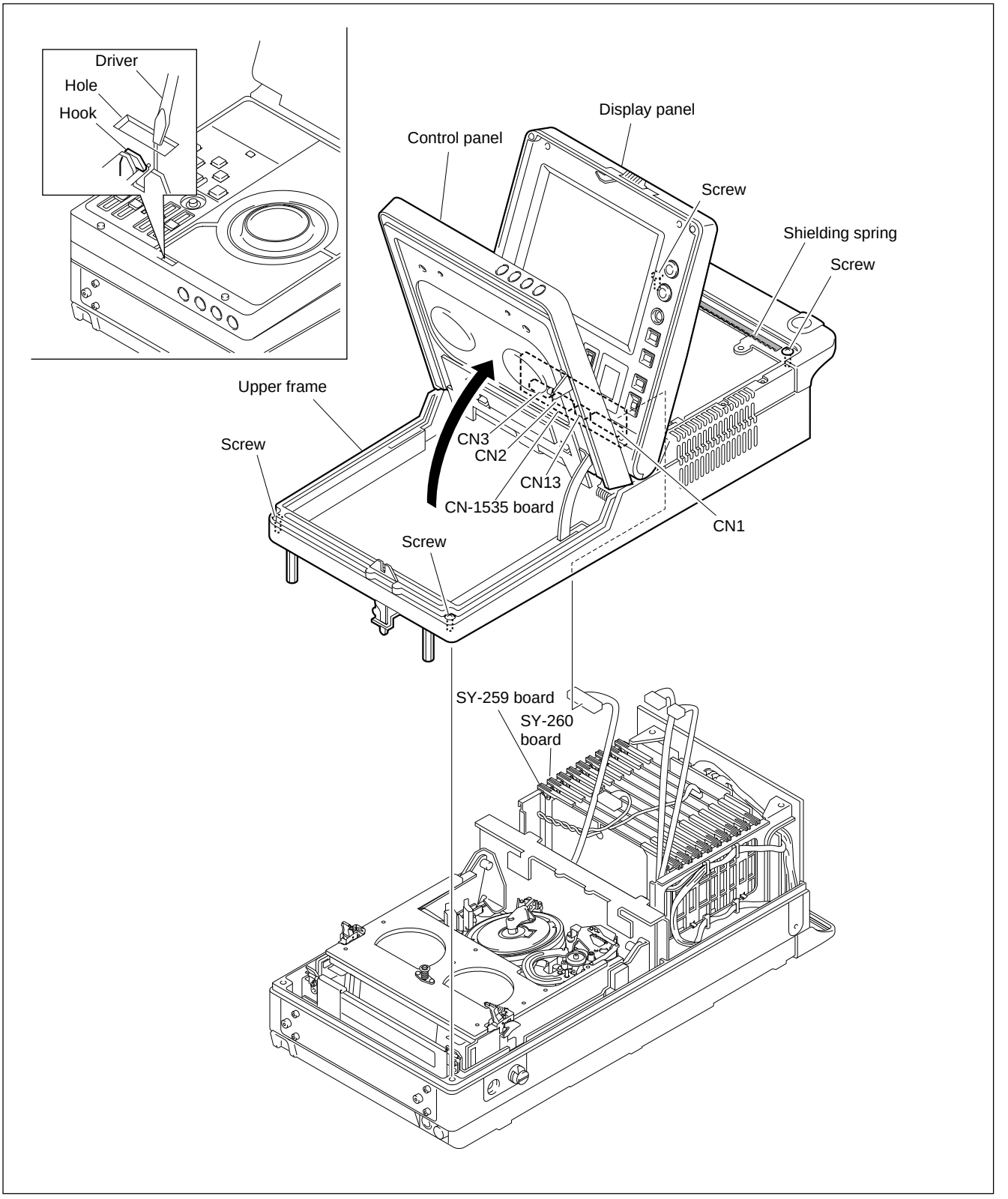
1. Remove the battery sub panel. (Refer to Section 1-6-1.)
2. Disconnect the SY-259 and SY-260 boards. (Refer to Section 1-8-1.)
3. Disconnect the four connectors (CN1, CN2, CN3, and CN13) on the CN-1535 board.
4. Open the display panel.
5. Insert a driver or similar item into the rectangular hole and unhook as shown in the figure. Open the control panel.
6. Fully loosen the four screws securing the upper frame. Remove the upper frame by lifting up.

   Note

   Each screw is held by a stop washer. Do not separate the washer from the screw when loosening.
7. Install the upper frame in the reverse order of removal.

   Note

   When installing, take care that the harnesses are not caught between the upper and lower frames.



1-6-3. Connector Panel

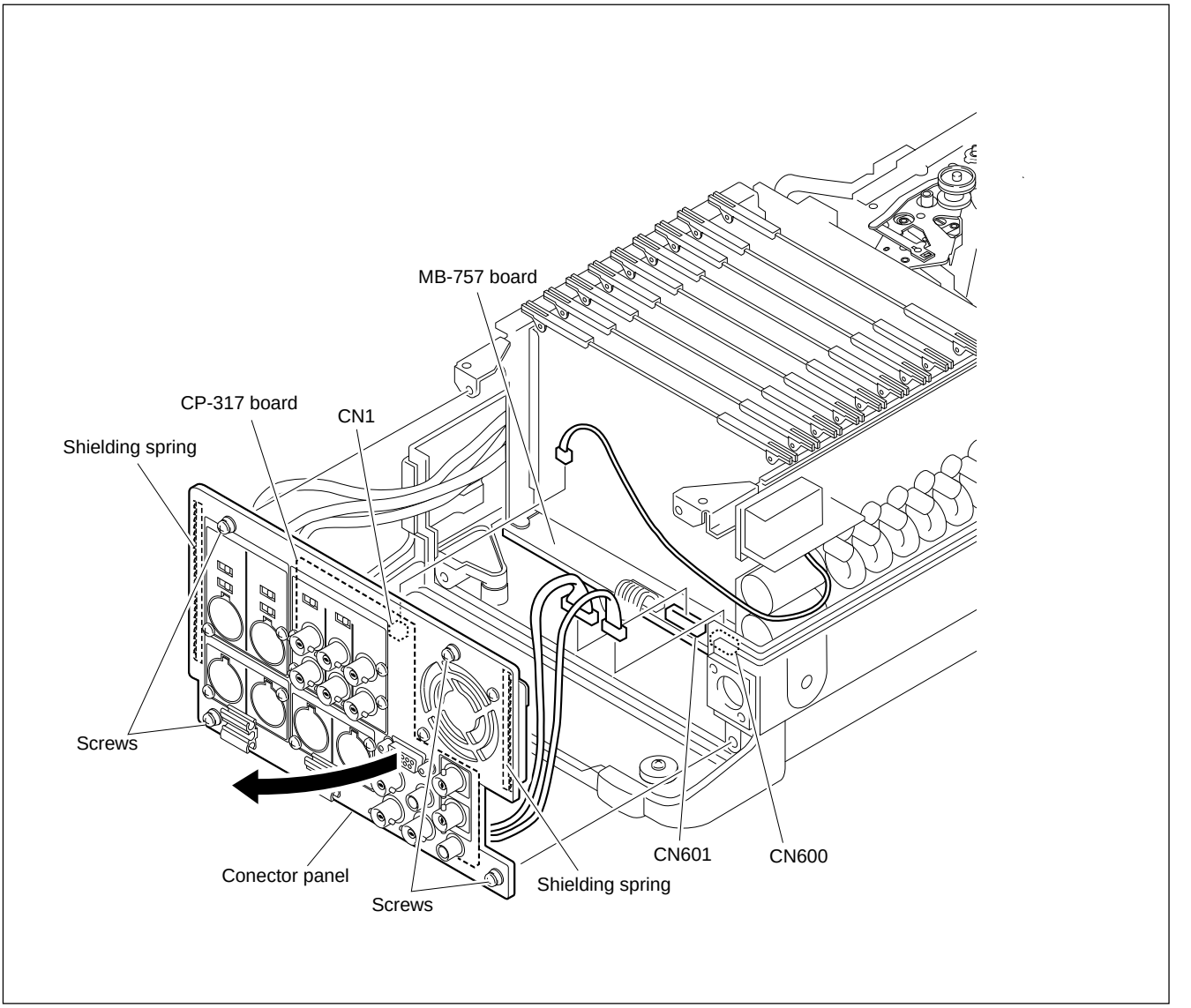
CAUTION

The unit is equipped with shielding springs which have sharp edges.
Do not touch them with bare hands. Pay careful attention when servicing.

1. Remove the upper frame. (Refer to Section 1-6-2.)
2. Loosen the four screws fully.

   Note

   Each screw is held by a stop washer. Do not separate the washer from the screw when loosening.
3. Disconnect the three connectors, CN600 and CN601 on the MB-757 board and CN1 on the CP-317 board.
4. Open the connector panel in the direction of the arrow.
5. Install the connector panel in the reverse order of removal.

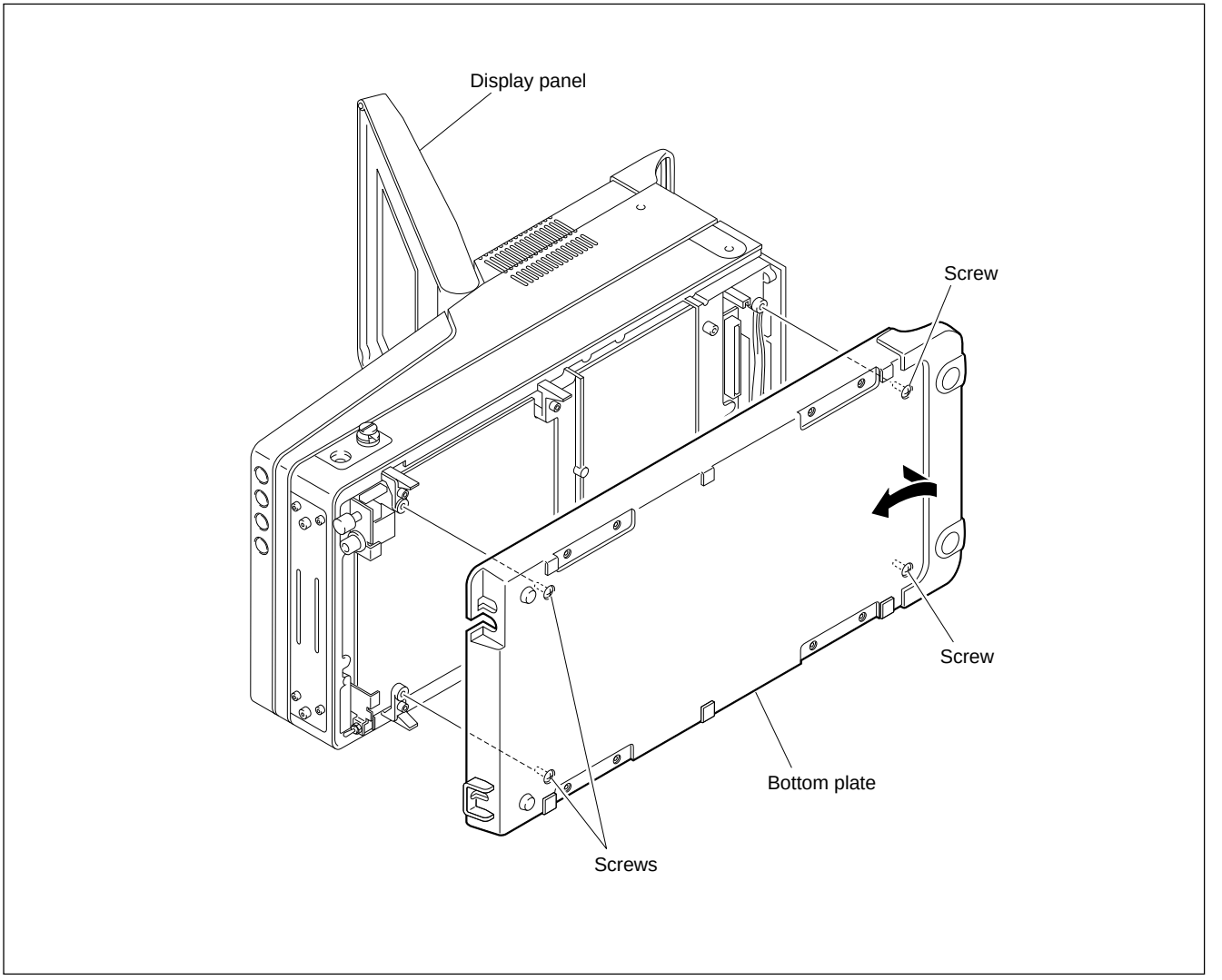


1-6-4. Bottom Plate

1. Lay the unit as shown in the figure. Open the display panel for stability.
2. Loosen the four screws securing the bottom plate fully.

   Note

   Each screw is held by a stop washer. Do not separate the washer from the screw when loosening.
3. Remove the bottom plate while drawing the rear of the plate in the direction of the arrow.



1-7. Removing/Installing the Cassette Compartment

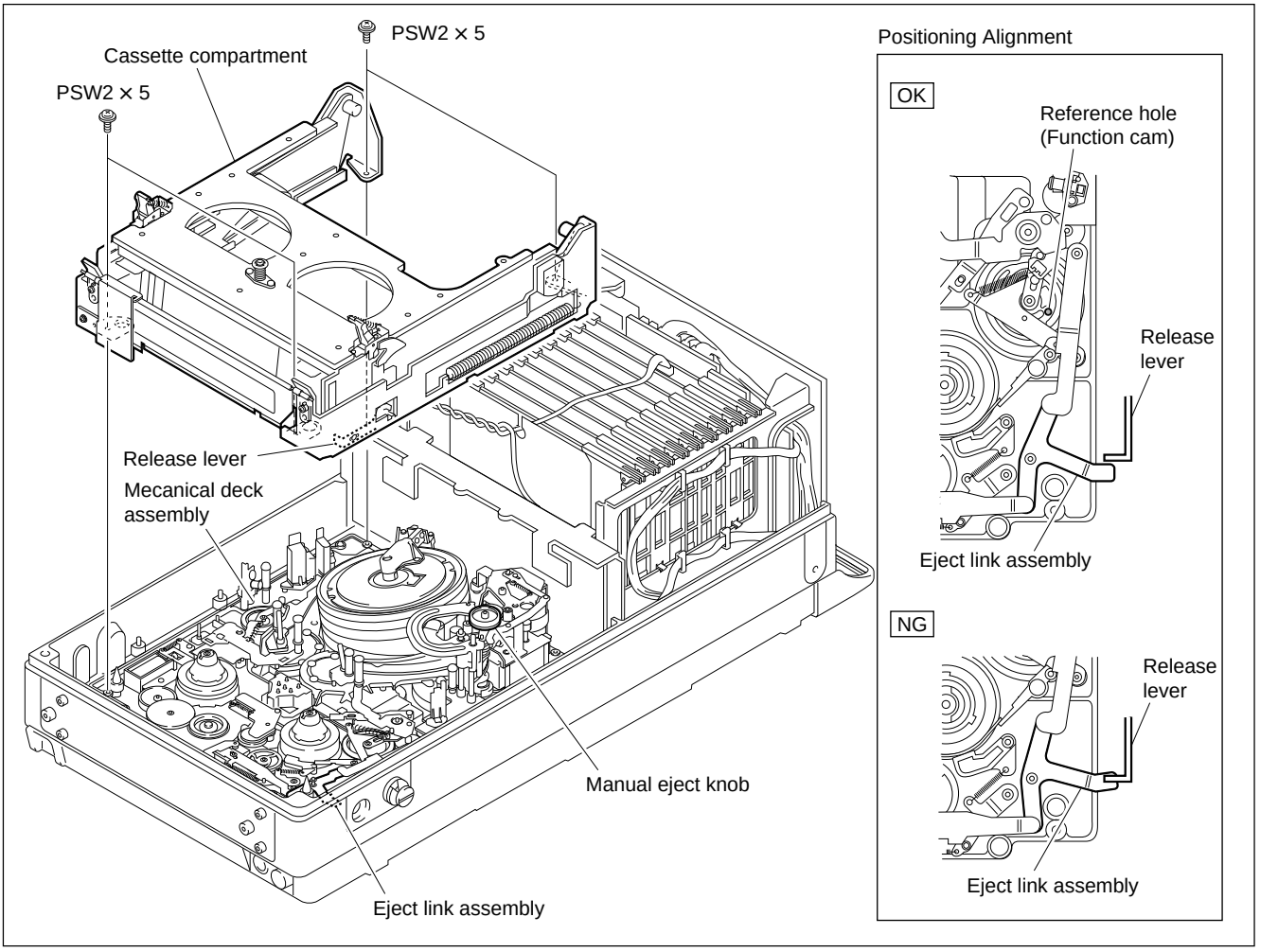
Note

When removing or installing the cassette compartment, it is possible for screws to fall into the mechanical deck assembly. To prevent this, it is recommended to magnetize the screwdriver bit moderately.

1. Make sure the unit is in the unthreading end state.
2. Remove the upper frame. (Refer to Section 1-6-2.)
3. Remove the four screws and remove the cassette compartment from the mechanical deck assembly.
4. Install the cassette compartment in the reverse order of removal.

   Notes

   - At installation, make sure that the release lever of the cassette compartment is in proper alignment with the eject link assembly as shown in the figure. If the release lever is positioned over the eject link assembly (for example when the unit is put in the manual eject mode), the eject link assembly must be aligned. The alignment can be performed in two possible methods:
     (1) Turn on the power once and the eject link assembly will return to the proper position automatically.
     (2) Turn the manual eject knob (red) clockwise two or three turns while pushing down until the reference hole of the function cam comes into sight.
   - The screws securing the cassette compartment should be torqued as specified.
     Tightening torque: 20×10^{-2} N•m (2.0 kgf•cm)



1-8. Disconnecting/Connecting the Printed Circuit Board

This section explains the disconnecting and connecting procedures for plug-in boards which have switches or slit lands that need to be set.
For other circuit boards, refer to the maintenance manual Part 2 Volume 1.

Note

Before disconnecting or connecting the plug-in board, be sure to turn off the power. To turn off the power, be sure to disconnect the battery or the cable connected at the DC IN connector, in addition to turning off the power switch.

1-8-1. Plug-in Board

CAUTION

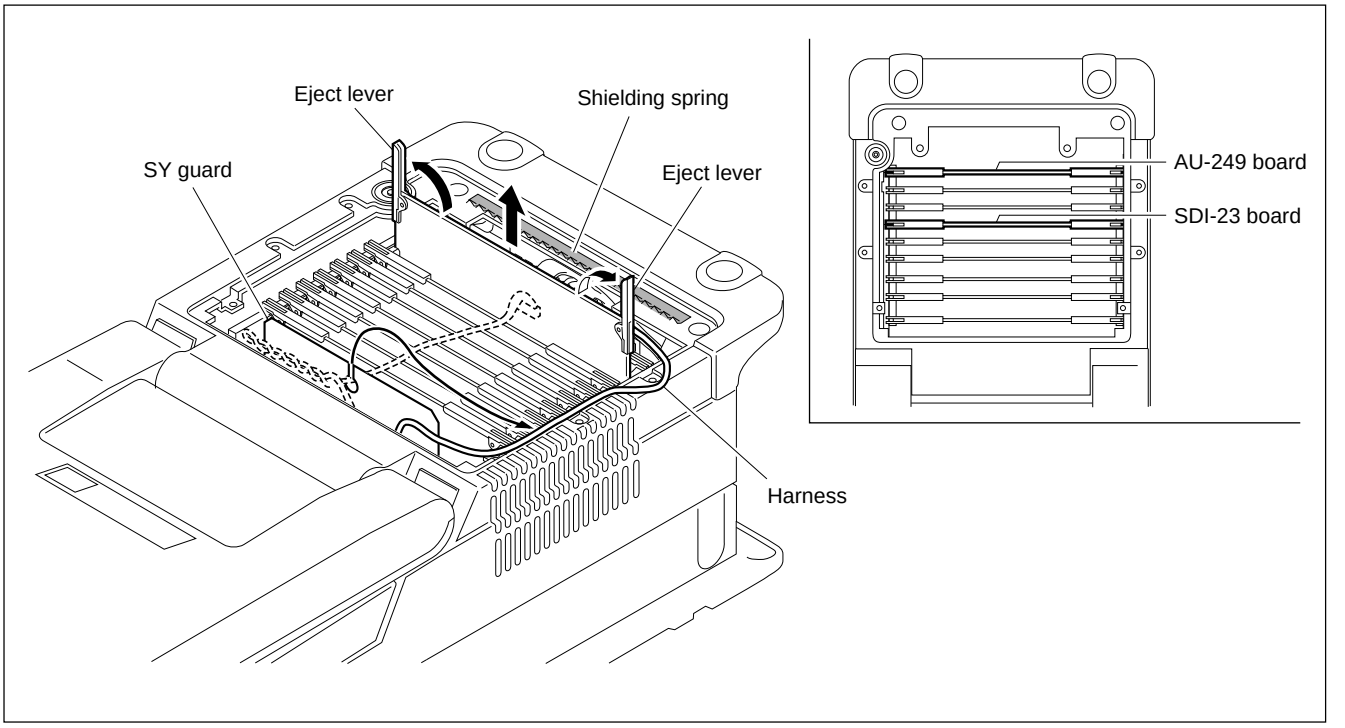
The unit is equipped with shielding springs which have sharp edges.
Do not touch them with bare hands. Pay careful attention when servicing.

Disconnecting

1. Remove the battery sub panel. (Refer to Section 1-6-1.)
2. Unfasten the harness extending from the AU-249 board from the SY guard. Route the harness as shown in the figure so that the harness is not caught in the plug-in board when pulling it out.
3. Raise the eject levers and pull out the board as shown in the figure.

Notes

- Before pulling out the AU-249 board, disconnect the harness from CN1 on the AU-249 board.
- Before pulling out the SDI-23 board, disconnect the three SDI cables (red, yellow, orange).
- When extending the SDI-23 board using an extension board (EX-617), remove the upper frame and unclamp the above-mentioned SDI cables before extending.
  (To remove the upper frame, refer to Section 1-6-2.)



Connecting

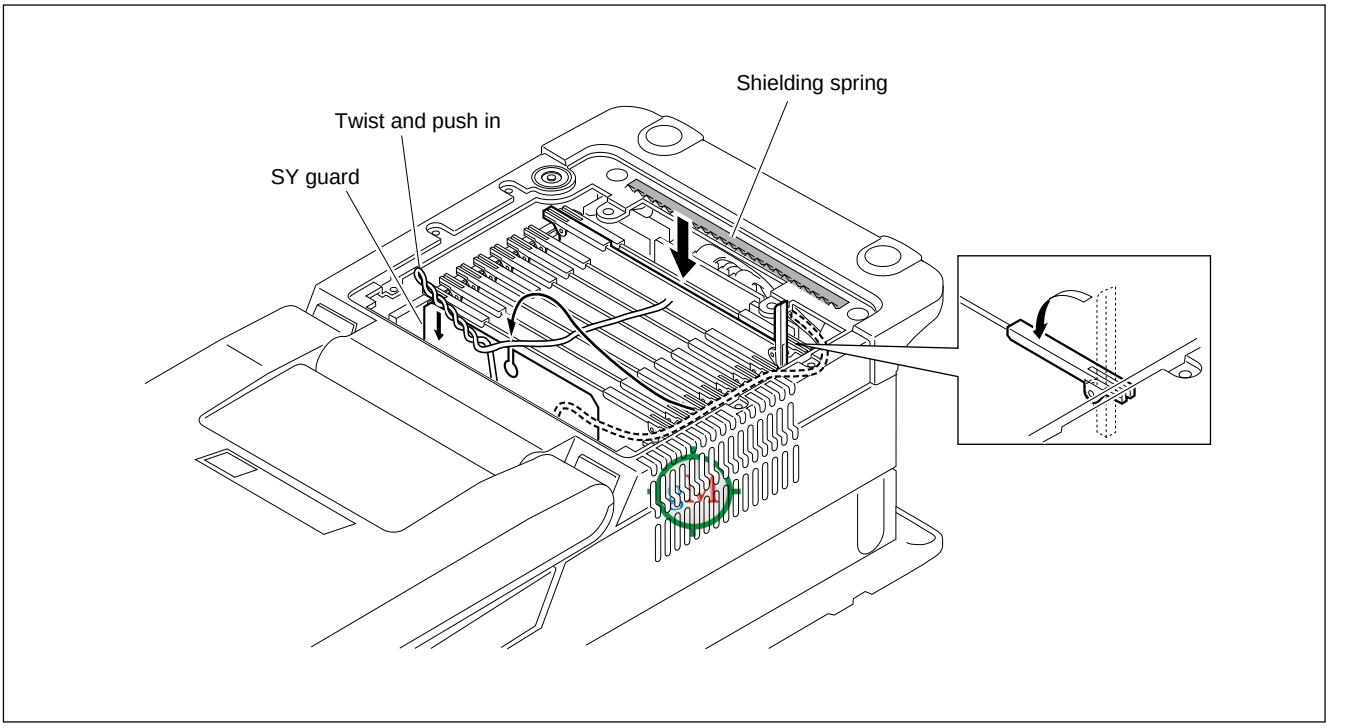
1. Raising the eject lever on the right, insert the plug-in board as far as it will go. (The lever on the left can be tilted.) Finally push in the board while tilting the lever as shown in the figure so that the board is connected to the mother board connector.

   Note

   If the plug-in board is to be inserted with the right lever tilted, the lever will strike the edge of the upper frame.

2 Arrange the harness extending from the AU-249 board as shown in the figure and route it through the hole of SY guard. Then twist the excess harness several times and push it in.

3. Install the battery sub panel. (Refer to Section 1-6-1.)

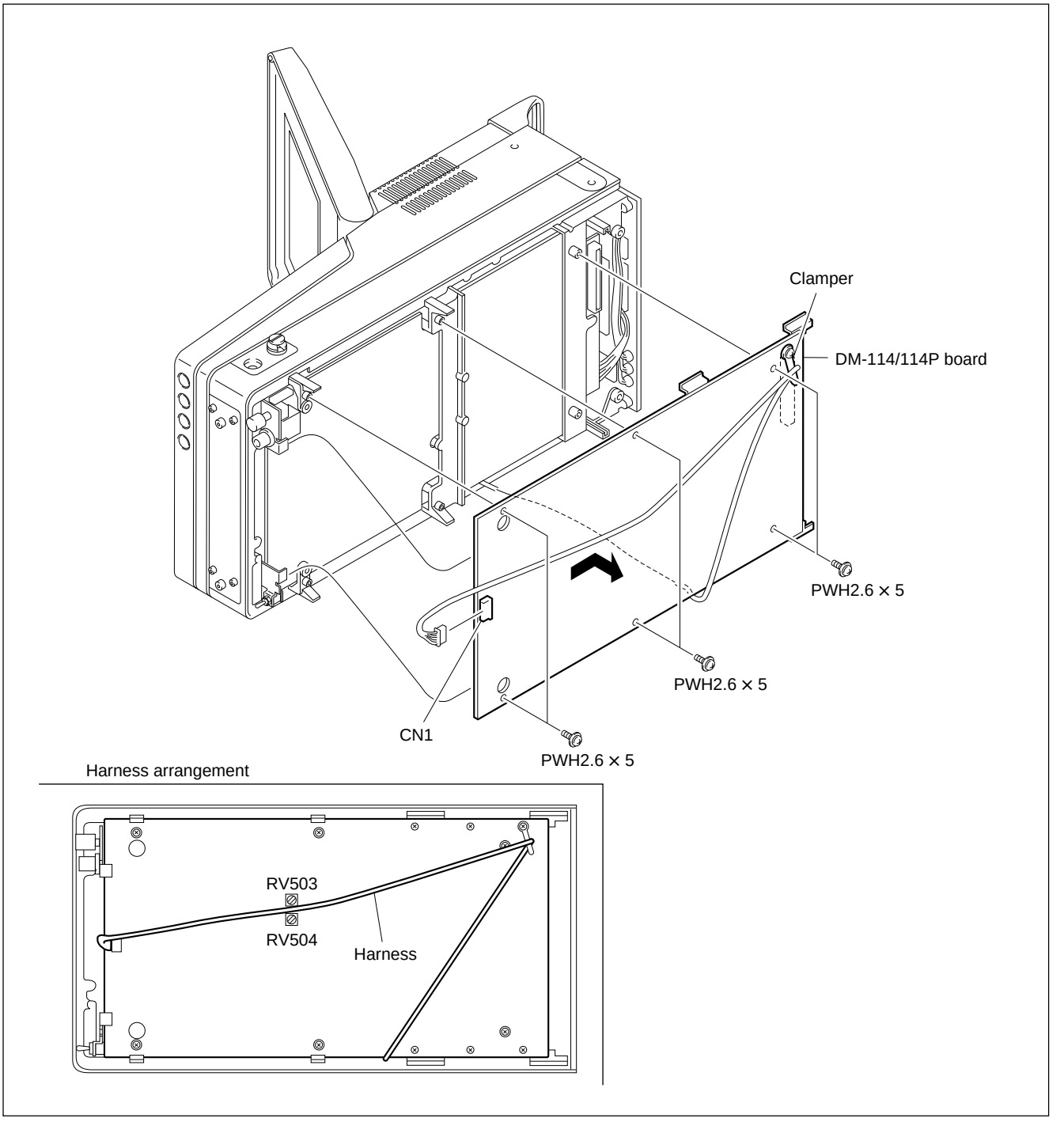


1-8-2. DM-114/114P Board

1. Remove the bottom plate. (Refer to Section 1-6-4.)
2. Remove the six screws and unfasten the harness from the clamp.
3. Disconnect the connector CN1.
4. Remove the DM-114/114P board in the direction of the arrow.
5. Install the DM-114/114P board in the reverse order of removal.

Notes

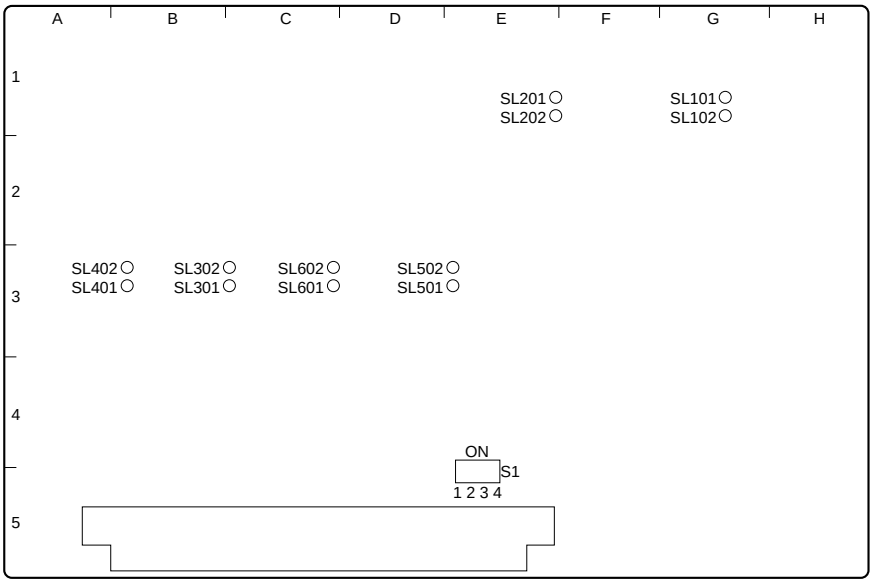
- Arrange the harness as shown in the figure.
- When installing, take care the harness is not caught between the bottom plate and chassis.



1-9. Settings for Internal Switches/Slit Lands

S201 on the SY-260 board is the factory-use switches. Do not change settings of the switches.

AU-249 Board



AU-249 Board (A Side)

Settings for Audio Input Headroom CH1, CH2 (for slit lands)

Channel	Ref.No.(Indication)	Input headroom (20 dB)	( ) : Factory setting 18 dB	16 dB
CH1	SL101 (18 dB)	Open	Short	Open
	SL102 (16 dB)	Open	Open	Short
CH2	SL201 (18 dB)	Open	Short	Open
	SL202 (16 dB)	Open	Open	Short

Settings for Audio Output Headroom CH1/CH3, CH2/CH4 (for slit lands)

Note

Selections of CH1/CH3 and CH2/CH4 are made using the sub LCD menu.

Channel	Ref.No.(Indication)	Output headroom (20 dB)	( ) : Factory setting 18 dB	16 dB
CH1/CH3	SL301 (18 dB)	Open	Short	Open
	SL302 (16 dB)	Open	Open	Short
CH2/CH4	SL401 (18 dB)	Open	Short	Open
	SL402 (16 dB)	Open	Open	Short

Settings for Monitor Output Headroom (for slit lands)

Channel	Ref.No.(Indication)	Output headroom ( ) : Factory setting (20 dB)	18 dB	16 dB
L	SL501 (18 dB)	Open	Short	Open
	SL502 (16 dB)	Open	Open	Short
R	SL601 (18 dB)	Open	Short	Open
	SL602 (16 dB)	Open	Open	Short

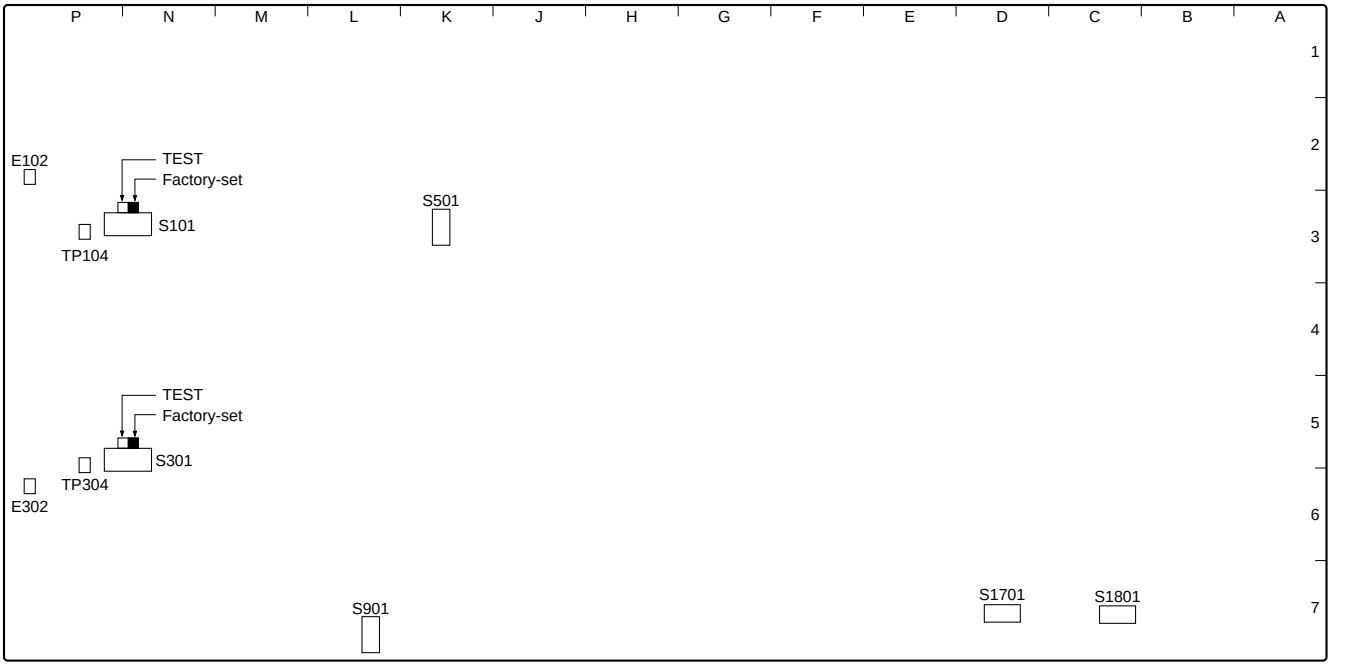
Switches

Note

Do not change settings of the factory-use switches.

Ref.No.	Description	Factory setting
S1-1	Factory use	OFF
S1-2	Factory use	OFF
S1-3	Factory use	OFF
S1-4	Factory use	OFF

DM-114/114P Board



DM-114 Board (B Side)

Switches

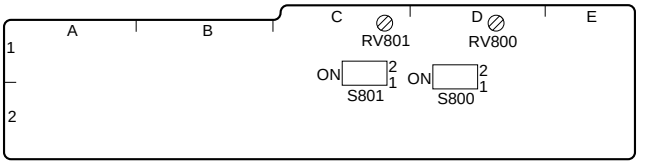
Note

Do not change settings of the factory-use switches.

Ref.No.	Switch name	Description	Factory setting
S101	Y EQ TEST	Test signal connection switch for Y RF LPF&EQ adjustment In adjusting, input the test signal to TP104 (GND to E102) with S101 set to TEST (see illustration) position	See illustration
S301	C EQ TEST	Test signal connection switch for C RF LPF&EQ adjustment In adjusting, input the test signal to TP304 (GND to E302) with S301 set to TEST (see illustration) position	See illustration
S501		Factory use	OFF
S901-1	ADJ	Use for RF EQ adjustment. OFF: Normal mode ON: Adjustment/Test mode	OFF
S901-2		Factory use	OFF
S901-3	AGC OFF	Turns on and off the AGC function during RF EQ adjustment OFF: Normal mode (AGC is turned on) ON: AGC is turned off	OFF
S901-4		Factory use	OFF

Ref.No.	Switch name	Description	Factory setting
S1701-1	Y MUTE	OFF: Normal mode ON: Luminance signal is muted	OFF
S1701-2		Factory use	OFF
S1701-3		Factory use	OFF
S1701-4	C MUTE	OFF: Normal mode ON: Color difference signal is muted	OFF
S1701-5	COMB	Selects whether a comb filter is turned on or off when the color difference signal has the significant line crawl which the LCC cannot correct OFF: Normal mode (Comb filter is turned off) ON: Comb filter is turned on	OFF
S1701-6		Factory use	OFF
S1701-7		Factory use	OFF
S1701-8		Factory use	OFF
S1801-1	D CLP OFF	Turns on and off the digital clamp function Usually turn off this switch, and a DC difference between B-Y and R-Y signals (if present) is corrected by the digital clamp function Turn on only to turn off the digital clamp for test OFF: Normal mode (Digital clamp is turned on) ON: Digital clamp is turned off	OFF (Digital clamp ON)
S1801-2		Factory use	OFF
S1803-3		Factory use	OFF
S1803-4		Factory use	OFF

PA-218 Board



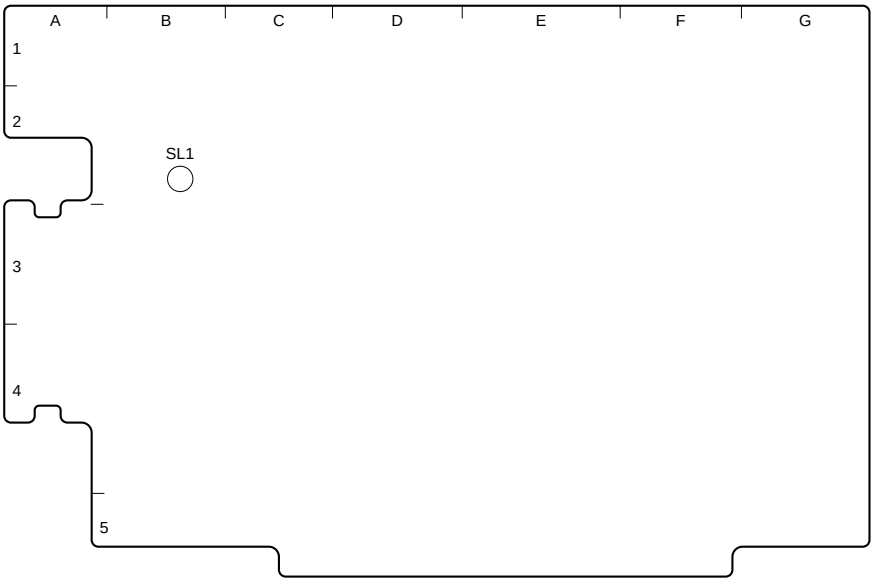
PA-218 Board (A Side)

HEAD TUNE switches (for Betacam/Betacam SP longitudinal audio playback)

At installation, it is unnecessary to change setting of the switches.

Channel	Ref.No	Description
CH1	S800	Adjusts the CH1 head amp high frequency response together with RV800 This switch adjusts the resonance frequency and RV800 adjusts the audio head dumping Switch position differs depending on the adjustment condition at the factory
CH2	S801	Adjusts the CH2 head amp high frequency response together with RV801 This switch adjusts the resonance frequency and RV801 adjusts the audio head dumping Switch position differs depending on the adjustment condition at the factory

RE-150 Board

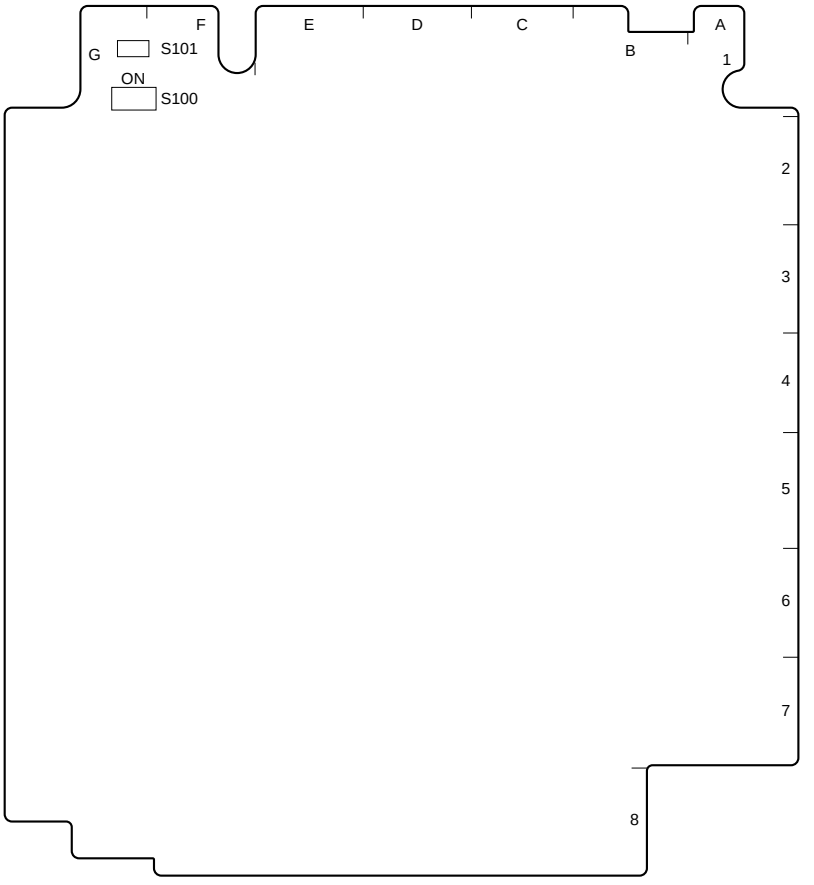


RE-150 Board (A Side)

Slit Land

Ref.No.	Description	Factory setting
SL1	Selects how the power is derived when the battery and external power supply are used simultaneously Open: Always derived from the external power supply Short: Normally derived from the external power supply When an input voltage is 10.5 V or below, automatically selects the battery	Open

SV-194 Board



SV-194 Board (B Side)

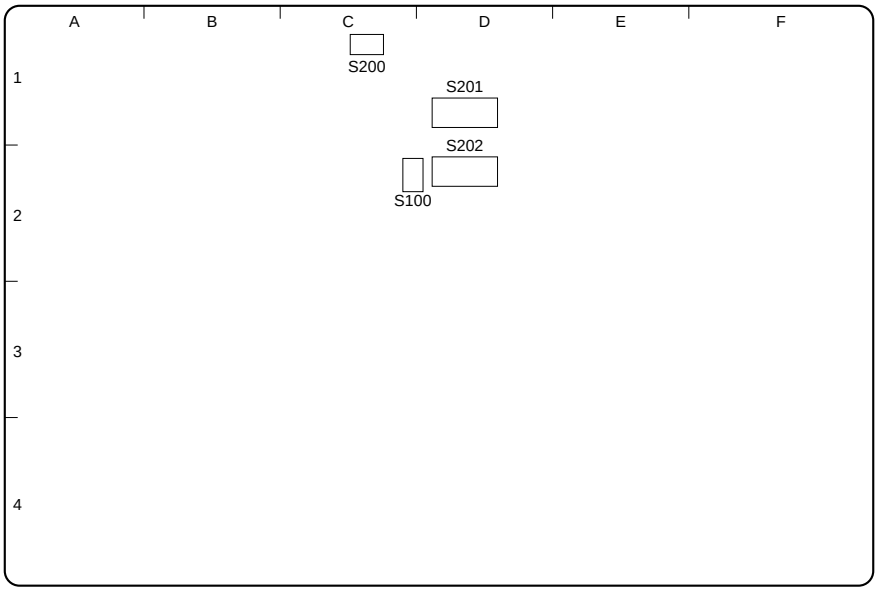
Switches

Note

Do not change settings of the factory-use switches.

Ref.No.	Switch name	Description	Factory setting
S100-1	CASSETTE COMPARTMENT LOCK	Turns on and off the function to assume that the cassette compartment is locked without the cassette compartment installed ON: Assumes the cassette compartment is locked OFF: Normal mode	OFF
S100-2	SERVO ERR NOT DET	Turns on and off the function to detect the servo error ON: Servo error is not detected OFF: Normal mode	OFF
S100-3		Factory use	OFF
S100-4	AUTO TRACKING OFF	Turns on and off the function to inhibit the auto-tracking during the tape path adjustment ON: Inhibits the auto-tracking (Tracking VR becomes active) OFF: Normal mode	OFF
S100-5		Factory use	OFF
S100-6		Factory use	OFF
S101	INITIAL	When powered on while pressing this switch, the servo adjustment data is returned to its default value	——

SY-259 Board



SY-259 Board (A Side)

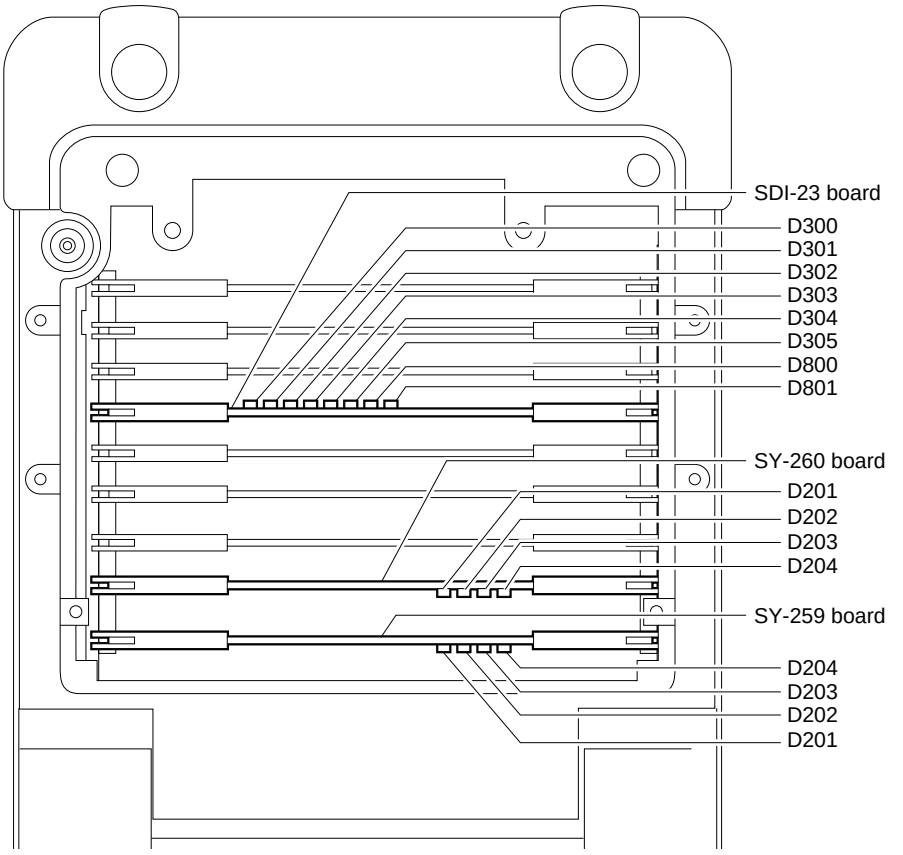
Switches

Note

The switches S202-5 to S202-8 have been set at the factory according to the characteristics of a VTR or unit. Only when replacing the board, be sure to change settings following instructions.
Also do not change settings of the factory-use switches.

Ref.No.	Switch name	Description	Factory setting
S100	SYSTEM RESET	Press to reset system control operation	——
S200	MAINTE MODE START	Press to start the maintenance mode	——
S201-1	EXTENDED MENU	Turns on and off the indication of extended setup menu OFF: Not indicated ON: Indicated	OFF
S201-2	MAINTE MODE ACEESS	OFF: Not accessible to the maintenance mode from the control panel ON: Accessible to the maintenance mode from the control panel	OFF
S201-3 to S201-8		Factory use	OFF
S202-1 to S202-4		Factory use	OFF
S202-5 S202-6	MODEL ID	Determined in combination with S202-5 and S202-6 S202-5 S202-6 DNW-A25/25P ON ON	ON
S202-7	J/UC	OFF: for Japan ON: except Japan	ON
S202-8	525/625	OFF:525/60 model ON:625/50 model	OFF (for DNW-A25) ON (for DNW-A25P)

1-10. Description on Internal Indicators



SDI-23 Board

Note

The indicators D302 to D305 function properly when the received signal conforms to the EDH* (with D301 lit).

* EDH : Error Detection and Handling

Ref.No.	Indictor name	Color	Description	Normal state
D300	SDI INPUT EXIT	Green	Lit when detecting the SDI format signal input at SDI IN connector	Lit
D301	RX EDH VALIDITY	Green	Lit when the received signal at SDI IN connector conforms to the EDH	Lit
D302	RX EDH OTHER ANC ERROR	Red	Lit when another ancillary data exists in the EDH portion of the received signal at SDI IN connector	Dark
D303	RX EDH ACTIVE PICTURE ERROR	Red	Lit when an active picture EDH error is detected from the received signal at SDI IN connector	Dark
D304	RX EDH FULL FIELD ERROR	Red	Lit when a full-field EDH error is detected from the received signal at SDI IN connector	Dark
D305	RX EDH ANCILLARY DATA ERROR	Red	Lit when an ancillary data EDH error is detected from the received signal at SDI IN connector	Dark
D800	SDI TRS NO ERROR	Green	Lit when the SDI format signal is normally received at SDI IN connector	Lit
D801	VCO ADJ OF MAINTENANCE	Green	Lit when EVR (electronic volume) data comes near its proper value during VCO free-run adjustment in the maintenance mode	——

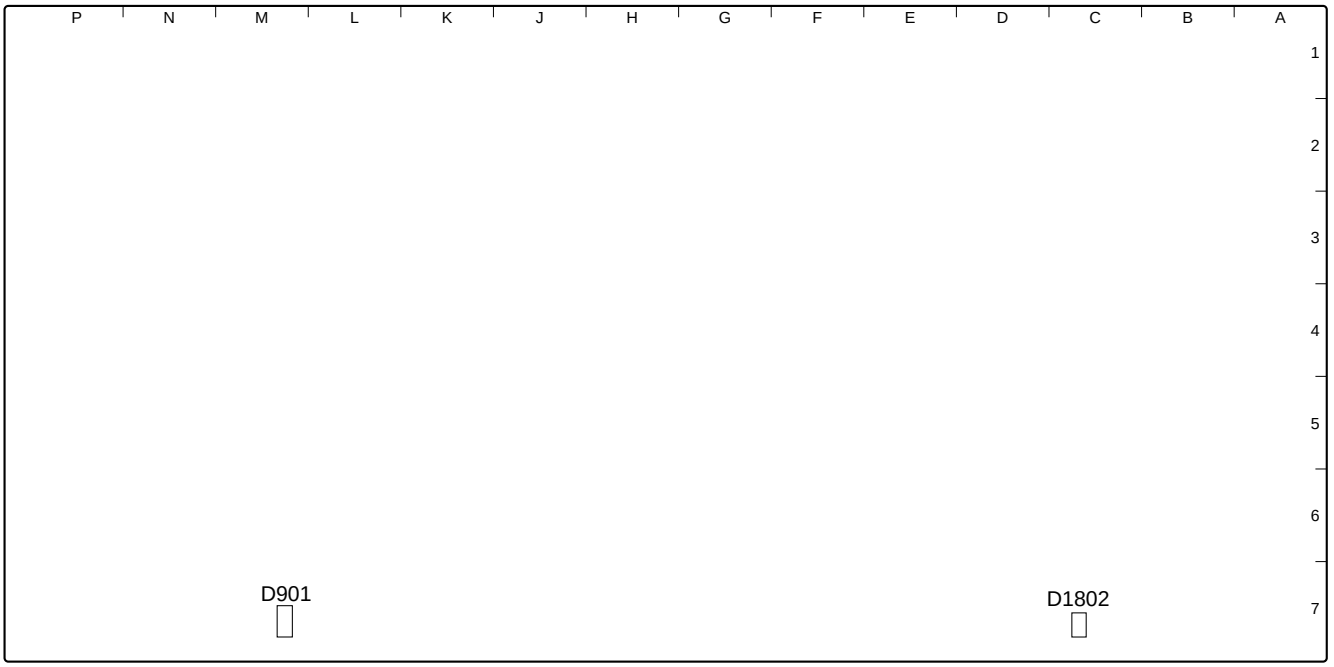
SY-259 Board

Ref.No.	Indicator name	Color	Description	Normal state
D201	SY1 STS1	Green	Blinks when the SYS1 CPU normally operates	Blinking
D202	SY1 STS2	Green	Lit when communication between SYS1 CPU and control panel is under normal conditions Unlit when the above communication is under abnormal conditions	Lit
D203	MAINTE	Green	Lit during execution of the maintenance mode	Dark
D204	SY1 ERR	Red	Lit when the SYS1 CPU does not normally operate Blinks when communication between SYS1 CPU and other CPU (SYS2, or KY) is under abnormal conditions	Dark

SY-260 Board

Ref.No.	Indicator name	Color	Description	Normal state
D201	SY2 STS1	Green	Blinks when the SYS2 CPU normally operates	Blinking
D202	SY2 STS2	Green	Lit when communication between SYS2 CPU and SV CPU is under normal conditions Unlit when the above communication is under abnormal conditions	Lit
D203	SY2 STS3	Green	Lit when communication between SYS2 CPU and SYS1 CPU is under normal conditions Unlit when the above communication is under abnormal conditions	Lit
D204	SY2 ERR	Red	Lit when the SYS2 CPU does not normally operate. Blinks when communication between SYS2 CPU and other CPU (SYS1, or SV) is under abnormal conditions	Dark

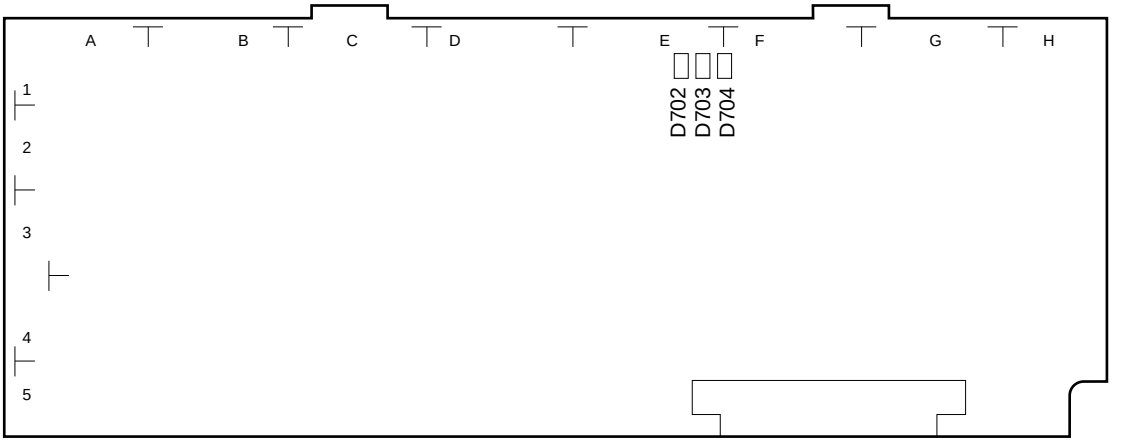
DM-114/114P Board



DM-114 Board (B Side)

Ref.No.	Indicator name	Color	Description	Normal state
D901	ADJUST	Orange (board suffix -11) Green (board suffix -12)	Normally blinks for some ten milliseconds at intervals of about 1 sec In adjustment mode (with S901-1 turned on), the blink is inverted	Blinking
D1802	TBC	Green	Blinks once a second during TBC micro-computer operation	Blinking

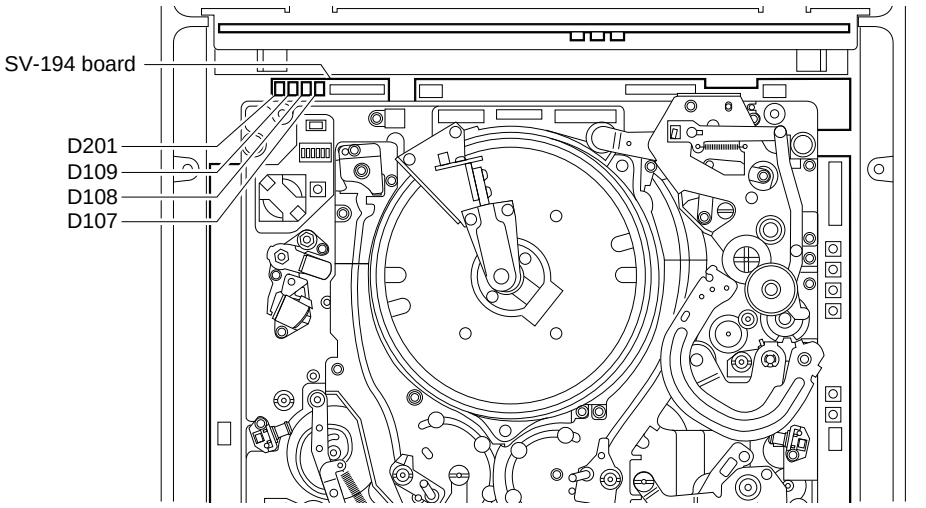
EQ-72 Board



EQ-72 Board (A Side)

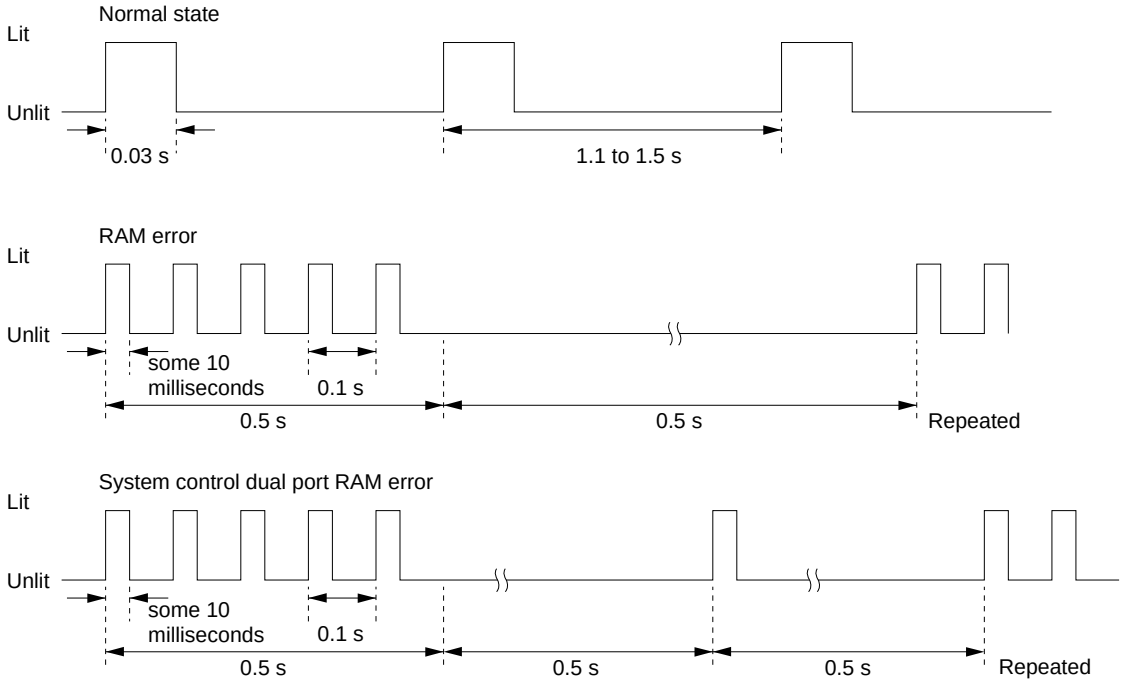
Ref.No.	Color	Description	Normal state
D702	Green	Lit only in the analog playback mode	——
D703	Red	Lit only in the REC mode	——
D704	Red	Blinks when EQ microcomputer normally operates Lit when any of the following errors occurs 1. NV-RAM check sum error 2. NV-RAM verifying error 3. INNER ECC status error 4. REC data parity error 5. When conditions necessary for automatic adjustment are not ready 6. When communication with system control is not started	Blinking

SV-194 Board



Ref.No.	Indicator name	Color	Description	Normal state
D107	SV	Green	Indicates by changing blinking intervals the result of communication check to ROM and RAM at power on (See illustration below)	Blinking
D108			Not used	——
D109	TRVR	Yellow	Lit when tracking VR operation is active (with S100-4 turned on)	Dark
D201	DRUM	Green	Blinks during drum microcomputer (IC212) operation Normally blinks for 30 milliseconds at intervals of about 1 sec. When the drum is locked, the blink is inverted	Blinking

Blinking pattern of D107

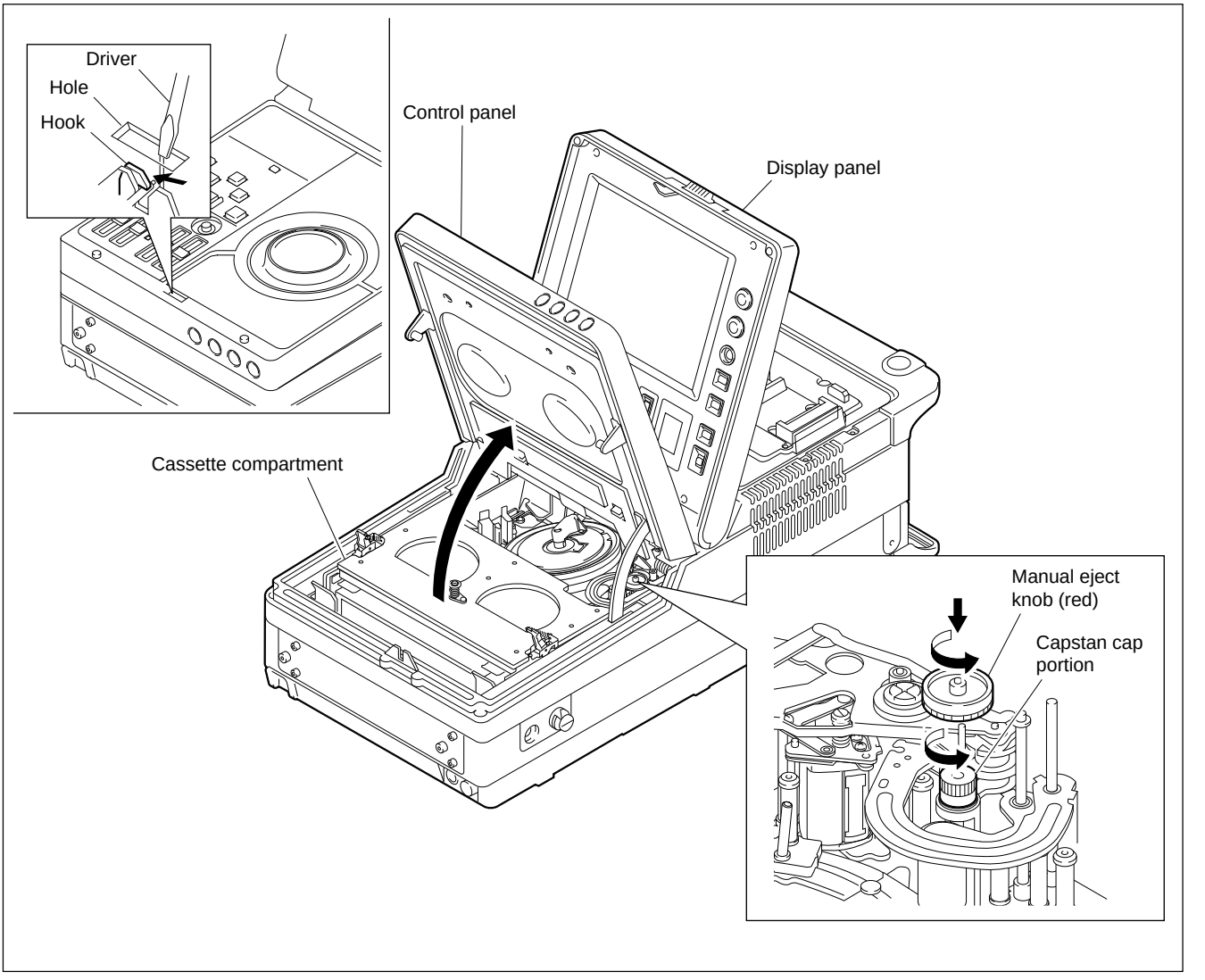


1-11. How to Take Out the Cassette Whose Tape is Slacked

1. Open the display panel.
2. Insert a driver or similar item into the rectangular hole and unhook as shown in the figure. Open the control panel.
3. Turn the manual eject knob (red) counterclockwise while pushing down.
4. Tape starting to slack, turn the capstan cap portion counterclockwise to take up the tape to the T reel.
5. Repeat procedures 3 and 4 until the cassette compartment is opened.

Notes

- Stop turning the manual eject knob just when the cassette compartment is opened.
- If the cassette compartment cannot be closed after taking the tape out by the above procedure, try to turn the manual eject knob clockwise two or three turns while pushing down.



1-12. Cleaning Clogged Video Heads

When the video heads are clogged, be sure to clean using a cleaning tape.
If the use of the cleaning tape does not solve clogged, clean using a cleaning cloth.
When using the cleaning tape, use the specified one and follow only the instructions with an extreme care. If not, the video heads may be damaged or worn out.
For details on how to clean, refer to Section 4 “Periodic Maintenance and Inspection”.

Reference

To clean using a cleaning tape:
4-2-1. Using Cleaning Tape

To clean using a cleaning cloth:
4-2-2. General Information for the Use of Cleaning Cloth
4-2-3. Cleaning of Video Heads and Tape Running Surface of Upper Drum

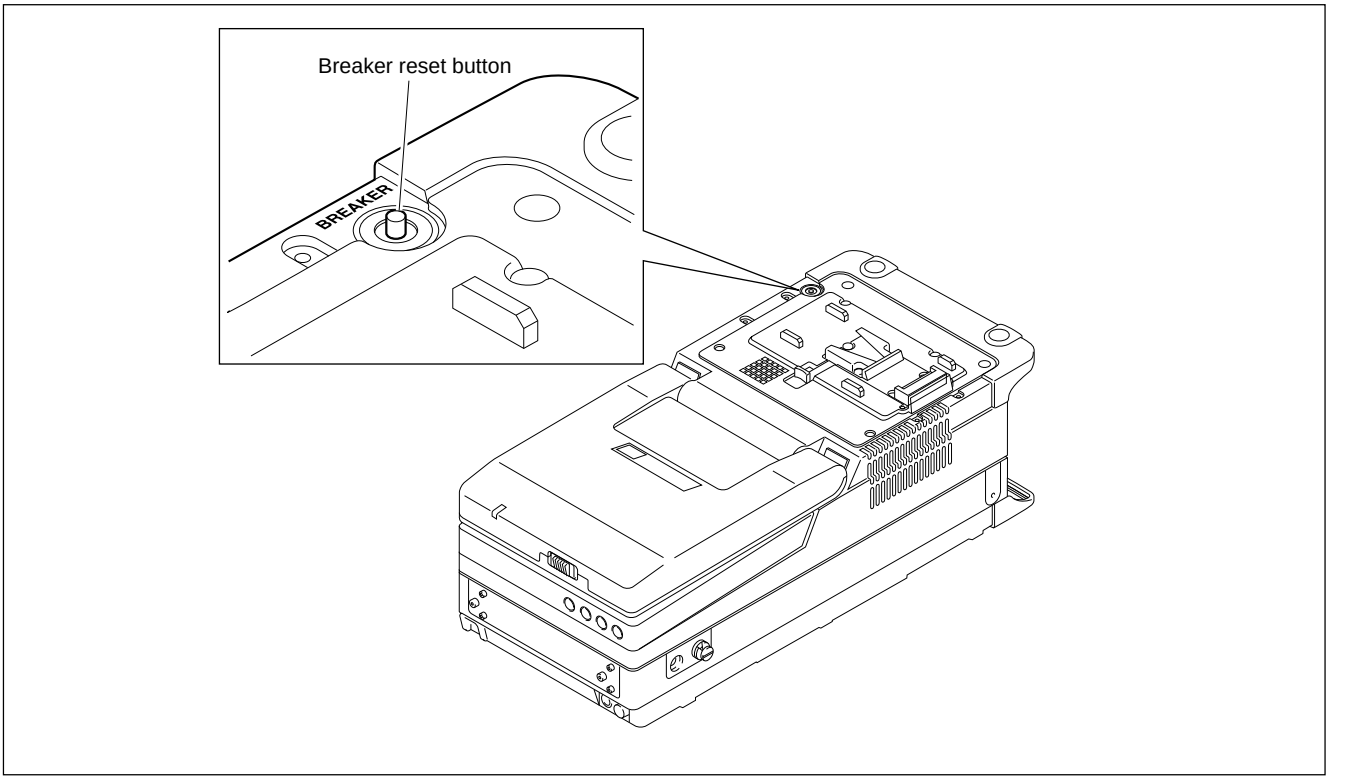
Specified Cleaning Tape

BCT-5CLN

1-13. Power Protection

1-13-1. Reset of Breaker

Overcurrent in the internal circuitry will trip the circuit breaker. If the breaker trips once, turn off the power and check the circuit for overcurrent. Before turning off the power, be sure to disconnect the cable connected at the DC IN connector or the battery, in addition to turning off the power switch.
Press the breaker reset button shown in the figure and the power to the unit will be turned on.



1-13-2. Information on IC Link

The unit is equipped with two IC links. One is F1 on the FL-251 board, and the other is PS600 on the CP-317 board. F1 on the FL-251 board will blow when the overcurrent flows because of internal circuit failure. PS600 on the CP-317 board will blow by overcurrent when an equipment connected at the DC OUT connector fails. If some IC link blows, turn off the power and check the circuit for overcurrent. Before turning off the power, be sure to disconnect the cable connected at the DC IN connector or the battery, in addition to turning off the power switch.
When replacing, be sure to use the specified part.

WARNING

The IC links are critical for safe operation. Be sure to replace them with the specified parts to avoid the danger of a fire or electric shock.

Board	Ref.No.	Description	Part No.
FL-251	F1	IC LINK 0.4 A	⚠1-576-122-21
CP-317	PS600	IC LINK 2 A	⚠1-533-282-21

1-14. Battery for Memory Backup

The unit is equipped with a battery for the memory (IC112) backup on the SY-259 board. When replacing, be sure to use the specified part.

Replacement Part:	BT112/SY-259 board
Part Description:	M4T28-BR12SH1 (lithium-ion battery)
Part No.:	8-749-010-67
Recommended Replacement Period:	Every seven years

In the memory, the following data is stored. When the battery is dead, or replaced with a new one, resetting current menu and menu banks 1 to 4 is required. For details on how to reset, refer to the operation manual supplied with the unit.
When the battery is dead, or replaced, error logs are all cleared.

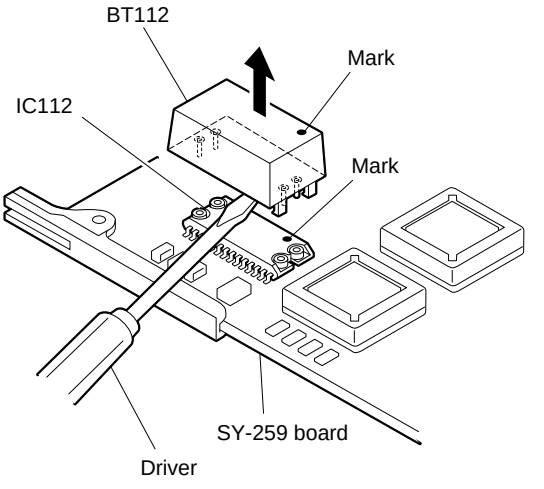
- Current menu
- Menu banks 1 to 4

Replacement

WARNING

When replacing the battery, ensure that a mark on the battery is correctly oriented as shown in the following figure. Improper connection may cause an explosion or leakage of fluid.

1. Disconnect the SY-259 board. (Refer to Section 1-8-1.)
2. Insert a flat blade driver between BT112 and IC112 to remove the battery.
3. Carefully install a new battery, ensuring that the mark's on the BT112 and IC112 are aligned.
4. Reset the current menu and menu banks. (Refer to the operation manual.)



1-15. Fixtures and Adjustment Equipment List

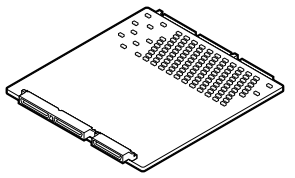
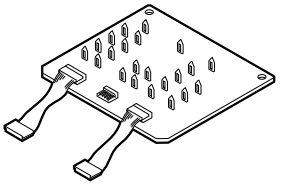
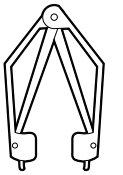
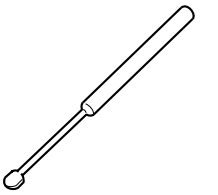
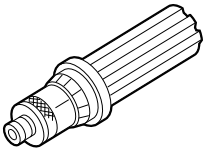
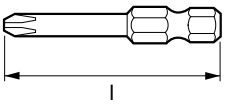
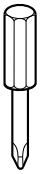
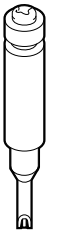
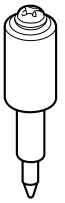
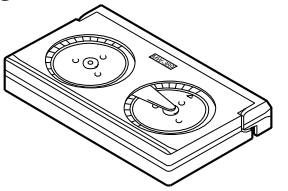
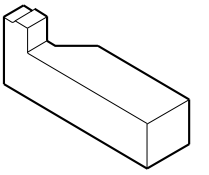
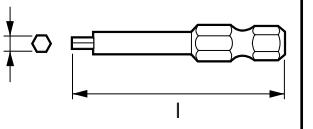
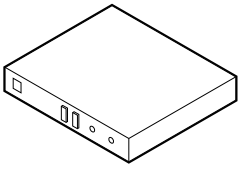
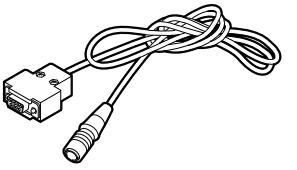
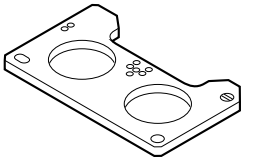
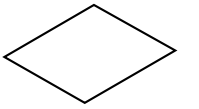
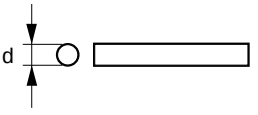
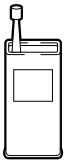
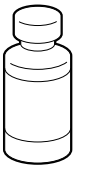
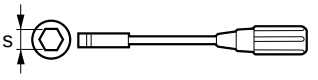
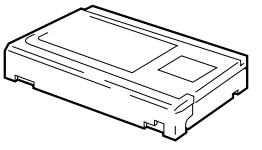
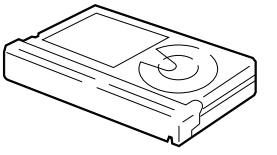
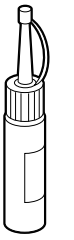
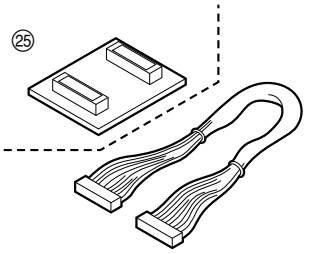
1-15-1. Fixtures

Note The tools are used only in the maintenance manual Part 2 are also described.

Fig.	Part No.	Name	For use	Description*
1	A-8316-723-A	Extension board (EX-617)	Extension of plug-in boards	P2
2	A-8317-304-A	HN-257 mounted circuit board	Tape path alignment	P2
3	J-6035-070-A	Extruction tool (for PLCC socket)	Extruction of PLCC IC	P2
4	J-6080-840-A	Inspection mirror	Tape curl check	P2
5	J-6252-520-A	Torque screwdriver (12 kgf•cm) (1.2 N•m) [JB-5252]	Tightening screws of cabinet for installing and removing	P1/P2
	J-6325-400-A	Torque screwdriver (3 kgf•cm)	Tightening screws (for M1.4 and M2 bit)	P1/P2
6	J-6325-110-A	Torque screwdriver bit (for M1.4)	Tightening screws on mech. deck (l = 75 mm)	P1/P2
7	J-6325-380-A	Torque screwdriver bit (for M2)	Tightening screws on drum, capstan, reel motor and boards (l = 162 mm)	P1/P2
8	J-6322-420-A	Tape guide adjustment driver (45)	Tape path adjustment	P2
9	J-6323-530-A	Stop washer fastening tool	Installation of stop washer	P2
10	J-6323-890-A	Torque cassette (FWD BACK TEN.) [MW-389]	FWD back tension REV back tension measurement	P2
11	J-6324-150-A	Reel table height adjustment tool [MW-415]	Reel height check	P2
12	J-6326-120-A	Hexagon bit (for torque driver)	Tightening screws on mechanical deck for installing and removing (d = 1.5 mm, l = 85 mm)	P2
13	J-6332-240-A	VISC phase adjusting tool	VISC alignment for PAL sytem	P2
14	J-6530-380-A	Conversion cable, 6P - 9P	Rewrite internal software	P2
15	J-7032-610-A	Cassette reference plate	Reel height adjustment	P2
16	3-184-527-01	Cleaning cloth (15 cm×15 cm)	Cleaning	P1/P2
17	3-649-266-01	Parallel pin (d = 1.6 mm)	Fixing position of cam gear	P2
	3-703-358-04	Parallel pin (d = 2.0 mm)	Fixing position of threading gear/drawing arm when installing	P2
18	7-432-114-11	Screw locking compound (200g)	Inhibits loosening of screws	P2
19	7-651-000-10	Sony grease SGL-601 (50 g)		P2
	7-651-000-11	Sony grease SGL-801 (50 g)		P1/P2
20	7-661-018-18	Diamond oil NT-68 (50 ml)		P2
21	7-700-751-01	Nut driver (s = 4.5 mm)	CTL/AT head height adjustment	P2
22	8-960-075-01	Alignment tape, SR5-1	Video/audio alignment (for 525/60 system)	P2
	8-960-075-11	Alignment tape, SR2-1	Servo alignment (for 525/60 system)	P2
	8-960-075-51	Alignment tape, SR5-1P	Video/audio alignment (for 625/50 system)	P2
	8-960-075-61	Alignment tape, SR2-1P	Servo alignment (for 625/50 system)	P2
23	8-960-096-01	Alignment tape, CR2-1B	Tracking alignment (for analog Betacam, NTSC)	P2
	8-960-096-41	Alignment tape, CR5-1B (METAL)	Video alignment (for analog Betacam, NTSC)	P2
	8-960-096-51	Alignment tape, CR2-1B PS	Tracking alignment (for analog Betacam, PAL)	P2
	8-960-097-44	Alignment tape, CR5-2A (OXIDE)	Betacam video alignment (for analog Betacam, NTSC)	P2
	8-960-097-45	Alignment tape, CR8-1A (OXIDE)	Betacam audio alignment (for analog Betacam, NTSC)	P2
	8-960-096-91	Alignment tape, CR5-1B PS (METAL)	Video alignment (for analog Betacam, PAL)	P2
	8-960-096-86	Alignment tape, CR8-1B PS (METAL)	Audio alignment (for analog Betacam, PAL)	P2
	8-960-098-44	Alignment tape, CR5-2A PS (OXIDE)	Video alignment (for analog Betacam, PAL)	P2
	8-960-098-45	Alignment tape, CR8-1A PS (OXIDE)	Audio alignment (for analog Betacam, PAL)	P2
24	9-919-573-01	Cleaning liquid	Cleaning	P1/ P2
25	A-8318-391-A 1-958-595-11	CN-1699 board Extension harness (CN-MB)	Extending control panel	P2

*: P1= Used in the maintenance manual Part 1./P2= Used in the maintenance manual Part 2.

Refer to “1-4. Alignment tape” of the maintenance manual Part 2 for details of the alignment tapes.

① 	② 	③ 	④ 
⑤ 	⑥ 	⑦ 	⑧ 
⑨ 	⑩ 	⑪ 	⑫ 
⑬ 	⑭ 	⑮ 	⑯ 
⑰ 	⑱ 	⑲ 	⑳ 
㉑ 	㉒ 	㉓ 	㉔ 
㉕ 			

1-15-2. Equipment for Adjustment

It is recommended to use the equipment listed below or the equivalents.
Each equipment is available as a standard product.

Equipment	Model name	Remarks	Description *1
Serial digital component video signal generator	Tektronix TSG-422-OP.1S	for generating 4:2:2 format digital signal	P2
Analog composite video signal generator	Tektronix TSG-170A	for 525/60 system	P2
	Tektronix TSG-271A	for 625/50 system	
Serial digital component monitor	Tektronix WFM601		P2
Analog composite waveform / vector monitor	Tektronix 1750 or 1780R	for measuring analog composite signal for 525/60 system	P2
	Tektronix 1751 or 1781R	for measuring analog composite signal for 625/50 system	
Oscilloscope	Tektronix 2465B		P2
Analog component waveform monitor	Tektronix WFM300	for video phase adjustment	P2
Spectrum analyzer	Advantest R3261A	with external trigger function bandwidth: more than 100 MHz	P2
Network analyzer	Anritsu MS420B		P2
Audio signal generator	Tektronix SG505-OP.02		P2
Audio analyzer	Tektronix AA501A-OP.02	for measuring distortion and levels	P2
Audio level meter	Hewlett-Packard HP3400A		P2
Digital voltmeter	Advantest TR6845		P2
Composite video monitor	Sony BVM-14F5U or BVM-14F5E *2 OP. BKM-24N OP. BKM-25P	 for 525/60 system for 625/50 system	P2
Terminator	75 Ω BNC type		P2
Recording tape	Sony Betacam SX tape (BCT-60SX etc.)		P2

*1: P2= Used in the maintenance manual Part 2.
*2: Use the composite video monitor that is applicable to the places in the world

1-16. Settings for External Editors

1-16-1. Time Code Settings for Recorder

When editing with an editor capable of the 1st-edit (BVE-2000)

- Time code operation block on the control panel
  INT/EXT switch ⇨ INT
  PRESET/REGEN switch ⇨ PRESET
  F-RUN/R-RUN switch ⇨ F-RUN

When editing directly from VTR to VTR

Note

Make sure that the setting of ITEM-610 on the setup menu is as follows;

- ITEM-610: REGEN CONTROL MODE ⇨ 0: auto edit

- Time code operation block on the control panel
  INT/EXT switch ⇨ INT
  PRESET/REGEN switch ⇨ PRESET
  F-RUN/R-RUN switch ⇨ R-RUN

1-16-2. VTR Constant Settings for External Editors

The following constants are standard for each type and system listed.
When using an external editor which requires the VTR constants, use the settings listed. VTR constants must also be set when switching between the 525 and 625 line systems.

	VTR CONSTANT 1								VTR CONSTANT 2							
	Data No.								Data No.							
System	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
525/60 System	B0	4B	00	96	07	07	04	8B	0A	08	FB	00	8D	3D	FF	4C
625/50 System	B1	4B	00	7D	07	07	04	8B	0A	07	FB	00	8F	4B	FF	4C

Values are represented in hexadecimal

Notes

1. Set the data No. 8 of VTR CONSTANT 1 to 0A for the following editors.
   - BVE-900 ROM version 1.08 or lower
   - BVE-600 ROM version 1.01 or lower
2. If the unit is controlled by the editor, be sure to set ITEM-401 on the setup menu as follows;
   - ITEM-401: FUNCTION MODE AFTER CUE-UP ⇨ 0: stop

1-16-3. System Phase Adjustment

An analog composite signal input at the VIDEO REF.IN or VIDEO INPUT connector of the unit should be within specifications in SC-H.

In combination with a digital switcher

The system phase adjustment is unnecessary usually.
Refer to the operation manual supplied with the digital switcher for details.

In combination with an analog switcher

The system phase adjustment for the unit is necessary.
Refer to the operation manual supplied with the analog switcher for details.

1-16-4. Setup Menu Setting of ITEM-701

When incorporating the unit into an editing system

Set ITEM-701 on the setup menu as follows;

- ITEM-701: SELECTION OF VIDEO/SYNC DELAY ⇨ 1: VIDEO DELAY

To prevent the picture shift in switching between when editing from VTR to VTR

Be sure to set the data No. of ITEM-701 for a recorder to "0: SYNC DELAY".

1-17. Setup Menu

This section explains the F-series items on the setup menu, which are for use during adjustment or maintenance.
For details on H-, 9- and B-series items, refer to the operation manual supplied with the unit.

1-17-1. Menu Operation

Preparation

The menus for F-series items are usually not accessible. To display them, internal switch setting for the SY-259 board is required. For details on the switch function, refer to Section 1-9.

• S201-1/SY-259 board ⇨ ON

Note

The menus for F-series items are exclusively for adjustment. After adjustment is completed, be sure to return them to their normal position.

Activating the menu

1. Press the MENU button.
2. Press the JOG dial to enter the JOG mode. (JOG indicator will light at this time.)
3. Turn the JOG dial while pressing the PLAY button.

Basic operation

. To select ITEM

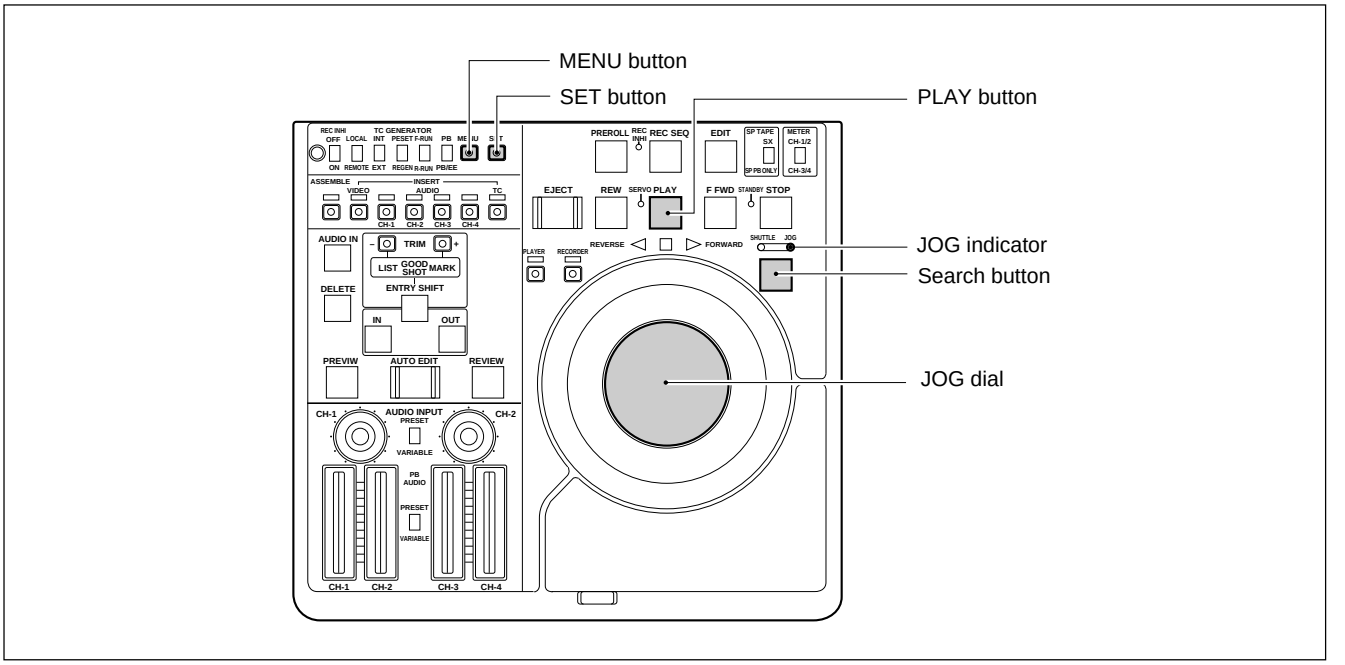
Turn the JOG dial while pressing the PLAY button to move the cursor to the desired ITEM.

. To change DATA

Press the search button. A window will open. Turn the JOG dial to change the setting value.

. To enter the setting value

Press the SET button.



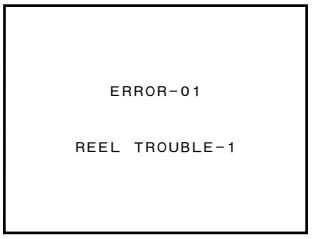
1-17-2. F-Series items

ITEM		DATA		Description
No.	**ITEM**	**No.**	**DATA**	
F01	AUDIO NR IN SP MODE	[0] 1	[on] switch select	**Note** This item is used exclusively for analog Betacam longitudinal audio playback adjustment for 625/50 system After adjustment is completed, return to the factory setting "0: on" Turns on and off the Dolby NR when using a metal tape 0: Dolby NR is turned on usually 1: Dolby NR is turned on and off depending on the setting of the sub LCD menu (in Audio setting page) **Note** When using an oxide tape, follows the sub LCD menu setting regardless of the above setting
F02	EMERGENCY TAPE PROTECTION	[0] 1	[enable] disable	**Note** This item is used exclusively for servo and mechanical adjustment After adjustment is completed, return to the factory setting "0: enable" Selects whether emergency tape protection operation is enabled or not when VTR detects error in tape transport mechanism 0: Tape protection operation is enabled 1: Tape protection operation is disabled
F13	TRACKING CONTROL VIA SEARCH DIAL	[0] 1	[off] on	**Note** This item is used exclusively for video tracking adjustment After adjustment is completed, return to the factory setting "0: off" Turns on and off the tracking control operation with SHUTTLE dial 0: Tracking control with SHUTTLE dial is not activated 1: Tracking control becomes active when turning SHUTTLE dial in PLAY mode
F16	DEVICE TYPE MODIFY:0H	[0000] 0001 | FFFF	[0] 1 | FFFF	Determines response data to 9-pin remote command DEVICE TYPE REQUEST (00h, 11h) 0000: Returns the original device type data of the unit Except 0000: Returns the set values as they are: The higher-order two digits are for DATA-1 The lower-order two digits are for DATA-2 **Note** Any selection of the above does not influence the whole VTR operation including TTP If this item is set to values other than the factory-setting (DATA:0000), the operation of the unit is not ensured under the 9-pin remote command control.
F21	PROCESS CONT VR LOCAL ENABLE	[0] 1	[off] on	Selects whether PROCESS CONTROL VR and sub LCD menu setting (in Video setting page) are enabled or not, when LOCAL DISABLE command is received through the 9-pin remote connector or the setup menu "006: LOCAL FUNCTION ENABLE" is set to "all disable" 0: Settings of PROCESS CONTROL VR and sub LCD menu are disabled 1: Settings of PROCESS CONTROL VR and sub LCD menu are enabled

Section 2
Error Message

2-1. Overview of Error Message

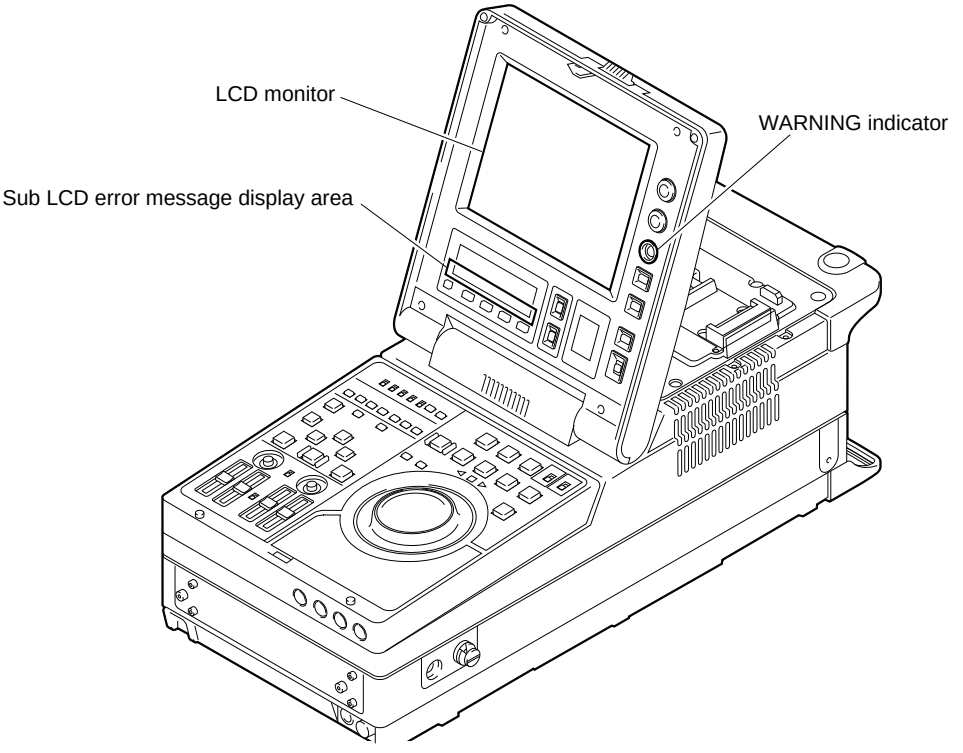
This unit has self-diagnostics function.
When trouble is detected, an WARNING indicator next the LCD monitor is lighted immediately, and an error message is displayed on the sub LCD.
Also, an error code and error message are superimposed on the video monitor connected to the VIDEO OUTPUT 2 (SUPER) connector and LCD monitor.
Furthermore, as for the some error codes, object which error occurred is displayed as sub error message on the video monitor and LCD monitor.



Ex. Superimposed on Video Monitor and LCD monitor

Notes

- To superimpose the error message on the video monitor, Set the SUPER item to ON by using the general setting page of the sub LCD menu. (For sub LCD menu, refer to the operation manual.)
- There are the error messages without error code. These messages are only displayed on the sub LCD.
- The error messages with error code are memorized to NV-RAM (Non-volatile RAM) as the error logging data.
  (Refer to Section 3 for the error logging data.)
- The messages on the sub LCD differ from the messages which are superimposed on the LCD monitor (video monitor) in some items.



Error Message/Code Display Area and WARNING Indicator

Error messages are described on Section 3-2 in the order of list.

Error List

Code	Message on time data display area	Page	Description
01	REEL TROUBLE	2-4	Tape slacking is detected in the unthreading operation.
02	REEL TROUBLE	2-5	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	2-6	Tape slacking, or tape breaking is detected in the REC or PLAY mode.
04	REEL TROUBLE	2-7	An malfunctional tape transport speed is detected in the FF or REW mode.
06	TAPE TENSION	2-7	Excessive tape tension is detected in the REC or PLAY mode.
07	CAPSTAN TROUBLE	2-8	Abnormal capstan motor rotation speed was detected in the REC, PLAY, SEARCH, or REW mode. Malfunction of capstan FG was detected in the REC or PLAY mode.
08	DRUM TROUBLE	2-8	Malfunction of drum motor is detected.
09	FUNC. CAM MOTOR	2-9	Malfunction of threading or unthreading operation is detected.
10	HUMID	2-9	Dew condensation is detected.
12	TAPE TOP SENSOR	2-10	Malfunction of tape top sensor is detected.
13	TAPE END SENSOR	2-10	Malfunction of tape end sensor was detected.
14	FAN MOTOR	2-11	Malfunction of cooling fan motor is detected.
40	DPR-87 BOARD 1	2-11	The abnormal operation of IC on DPR-87 board was detected.
43	DPR-87 BOARD 4	2-12	The abnormal operation of IC (SDRAM) on DPR-87 board was detected.
92	INTERNAL I/F 1	2-12	Abnormality in the interface between SYS1 CPU (on SY-259 board) and other CPU/MPU is detected.
93	CPU INITIALIZE	2-13	Abnormality was detected in the communication between SERVO CPU (SV-194 board) and DRUM MICOM (SV-194 board).
96	SY NV-RAM ERROR	2-13	The abnormal operation of an NV-RAM (on SY-259 board) for the system control system is detected.
97	SV NV-RAM	2-14	The abnormal operation of an NV-RAM (on SV-194 board) for the servo system is detected.
98	RF NV-RAM ERROR	2-14	The abnormal operation of an NV-RAM (on EQ-72, or DM-114/114P board) for the RF system is detected.
99	INTERNAL I/F 2	2-15	Abnormality in the interface between SYS2 CPU (on SY-260 board) and SERVO CPU (on SV-194 board) or MPU (on EQ-72, DM-114/114P, or SDI-23 board) is detected.

Notes

- Error codes 01 through 13 detect in the SV-194 board.
  Error code 14 detects in the SY-259 board.
  Error codes 40 through 43 detect in the SY-260 board.
  Error codes 92 through 99 detect in the SY-259 and/or SY-260 board.
- There are two error groups of error codes: VTR and OTHERS. If errors occur in multiple error groups, the error message of each group are switched at two-second intervals.
  Also, if multiple errors occur in error group, the priority level of each group display are as follows:
  VTR: 97, 02, 03, 04, 07, 06, 01, 09, 08, 10, 12, 13
  OTHERS: 92, 96, 98, 99, 93, 40, 43

2-2. Details of Error Messages

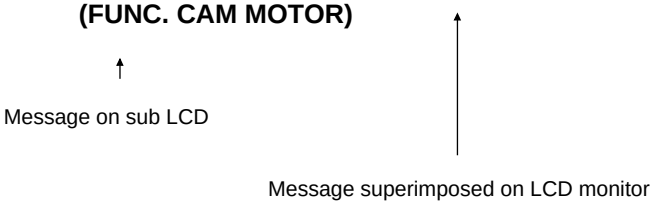
CAUTION

The “protection mode” described in this section means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The DNW cannot be automatically recovered to the normal state when the DNW once enters the protection mode. Be sure to turn the power on again under the absence of the cassette tape.
If the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to “1-11. How to Take Out the Cassette whose Tape is Slacked”. Never turn the power on again without taking out the cassette tape. This may damage the tape.

Note

The messages on the sub LCD differ from the messages which are superimposed on the LCD monitor in some items. In this section, each message indicates as following example.

Ex. : ERROR-09 FUNC. CAM MOTOR TIME OUT
(FUNC. CAM MOTOR)



ERROR-01 REEL TROUBLE - 1 (REEL TROUBLE)

Description: Tape slacking was detected during unthreading.

Detecting conditions: When no take-up reel FG can be detected in the unthread operation.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- FG sensor trouble in take-up reel
- Take-up reel FG waveform shaper circuit (SV-194 board) trouble
- Take-up reel brake trouble
- Harness disconnection
- Take-up reel table height adjustment defect

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-11). Do not turn the power on again without taking out the cassette. This may damage the tape.

ERROR-02 REEL TROUBLE - 2 (REEL TROUBLE)

Description: Tape slacking or tape breaking was detected in SEARCH, FF, or REW mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value.
2) When the detect voltage of the supply tension sensor is lower than the specification continuously for some seconds.
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- FG sensor trouble in supply reel motor or take-up reel
- Supply reel FG waveform shaper circuit (SV-194 board) trouble
- Supply or take-up reel motor trouble
- Supply reel motor drive circuit (SV-194 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (SV-194 board) trouble
- Capstan FG waveform shaper circuit (SV-194 board) trouble
- Take-up torque insufficiency during REW due to supply tension sensor or supply tension detect circuit (SR-50 board) trouble
- Servo adjustment defect on capstan, reel, and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (SV-194 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-11). Do not turn on the power again without taking out the cassette. This may damage the tape.

ERROR-03 REEL TROUBLE - 3 (REEL TROUBLE)

Description: Tape slacking, or tape breaking was detected in the REC or PLAY mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value.
2) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds.
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- FG sensor trouble in supply reel motor or take-up reel
- Supply or take-up reel FG waveform shaper circuit (SV-194 board) trouble
- Supply reel motor trouble
- Supply reel motor drive circuit (SV-194 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (SV-194 board) trouble
- Capstan FG waveform shaper circuit (SV-194 board) trouble
- Servo adjustment defect on capstan, reel, and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (SV-194 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Stop the tape transport and enters the rest state.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-11). Do not turn on the power again without taking out the cassette. This may damage the tape.

ERROR-04 REEL TROUBLE - 4 (REEL TROUBLE)

Description: Abnormal tape transport speed was detected in the FF mode.

Detecting condition: When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than ten seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- FG sensor trouble in supply reel motor or take-up reel
- Supply reel motor trouble
- Supply or take-up reel FG waveform shaper circuit (SV-194 board) trouble
- Supply reel motor drive circuit (SV-194 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply reel brake solenoid drive circuit (SV-194 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-06 TAPE TENSION ERROR (TAPE TENSION)

Description: Excessive tension was detected in the REC or PLAY mode.

Detecting condition: When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Supply tension sensor or its related circuit (SV-194 board) trouble
- Supply reel motor trouble
- Supply reel motor drive circuit (SV-194 board) trouble
- Servo adjustment defect on supply reel and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (SV-194 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-07 CAPSTAN TROUBLE (CAPSTAN TROUBLE)

Description: Abnormal capstan motor rotation speed was detected in the REC, PLAY, SEARCH, or REW mode.
Malfunction of capstan FG was detected in the REC or PLAY mode.

Detecting conditions:
1) When the capstan motor ratation speed is under a half of the specified speed continuously for more than four seconds.
2) When the frequency calculated from the capstan FG is out of the specification in the REC, or PLAY mode.

Sub error message: None

Possible causes:
- Capstan motor trouble
- FG sensor trouble in capstan motor
- Capstan motor drive circuit (SV-194 board) trouble
- Capstan motor FG waveform shaper circuit (SV-194 board) trouble
- Capstan FG duty adjustment defect

Protecting operations: Stops the tape transport and enters the rest state.

ERROR-08 DRUM TROUBLE (DRUM TROUBLE)

Description: Malfunction of drum motor was detected.

Detecting condition:
1) When the drum FG is not detected for more than 0.2 seconds.
2) When the drum rotation speed is over 90 rotations per second, and this condition continues and accumulates about three seconds within ten seconds.
3) When the drum rotation speed is under the specified.

Sub error message: None

Possible causes:
- Drum motor trouble
- Drum microcomputer (IC212 on SV-194 board) trouble
- Drum motor drive circuit (SV-194 board) trouble
- Drum FG/PG waveform shaper circuit (SV-194 board) trouble
- Assembly defect during upper drum replacement

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-09 FUNC. CAM MOTOR TIMEOUT (FUNC. CAM MOTOR)

Description: Malfunction of threading or unthreading operation was detected.

Detecting conditions:
1) When condition of the function cam sensors are not shifted more than four seconds in other status of threading end or unthreading end.
2) When the mode shift of the function cam sensors are abnormal state.

Sub error message: None

Possible causes:
- Threading motor trouble
- Threading motor drive circuit (SV-194 board) trouble
- Threading mechanism trouble
- Function cam sensor trouble

Protecting operations: Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-10 HUMID (HUMID)

Description: Dew condensation was detected.

Detecting condition: When the condensation sensor detects dew condensation continuously for about two seconds.

Sub error message: None

Possible causes:
- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC401 on SV-194 board) trouble

Protecting operations: Stops the drum rotation or prohibits the rotation of drum.
Prohibits the cleaning roller operation.
Stops the tape transport and enters the rest state in the unthread end state when the tape is threaded in states other than PLAY and REC mode.
Prohibits the tape threading.

Note

When this sensor detects due condensation once, the error message will be displayed for about 40 minutes even if a dry state is detected later.

ERROR-12 TAPE TOP SENSOR TROUBLE (TAPE TOP SENSOR)

Description: Malfunction of tape top sensor was detected.

Detecting condition: When the tape top is detected continuously for more than seven seconds.

Sub error message: None

Possible causes:
- Tape top sensor trouble
- Tape top detection circuit (SV-194 board) trouble
- Tape top input port (IC116 on SV-194 board) trouble
- Harness disconnection
- The tape cannot move at the tape top due to troubles other than the tape sensor.

Protecting operations: Stops the tape transport and enters the rest state during tape transport.

ERROR-13 TAPE END SENSOR TROUBLE (TAPE END SENSOR)

Description: Malfunction of tape end sensor was detected.

Detecting condition: When the tape end is detected continuously for more than seven seconds.

Sub error message: None

Possible causes:
- Tape end sensor trouble
- Tape end detection circuit (SV-194 board) trouble
- Tape end input port (IC116 on SV-194 board) trouble
- Harness disconnection
- The tape cannot move at the tape end due to troubles other than the tape sensor.

Protecting operations: Stops the tape transport and enters the rest state during tape transport.

ERROR-14 FAN MOTOR TROUBLE (FAN MOTOR)

Description: Malfunction of cooling fan motor was detected.

CAUTION

If this error occurred, stop immediately operation of the unit, and turn off the power.
If the unit uses continuously under the fan is stopped state, overhearting inside the unit can cause a fire or a failure.

Detecting condition: When the fan motor FG frequency is less than 60% of the specified value.

Sub error message: None

Possible causes:
- Fan motor trouble
- Fan motor FG input port (SY-259 board) trouble
- Harness disconnection

Protecting operation: None

ERROR-40 DPR-87 BOARD ERROR 1 INITIALIZE CHECK (DPR-87 BOARD 1)

Description : The abnormal operation of IC on DPR-87 board was detected.

Detecting condition : When the diagnostic of each IC at turning on the power is in abnormal state.

Sub error message :
F-CONT
DIGI FIL
SX ENC
SX MEP
ECC ENC
OUTER
SX DEC

For diagnostic of DPR-87 board, refer to section 1-8 (menu number:C24) of maintenance manual part 2 volume 1.

Protecting operation : Displays only this error.

ERROR-43 DPR-87 BOARD ERROR 4 SDRAM CHECK (DPR-87 BOARD 4)

Description : The abnormal operation of IC (SDRAM) on DPR-87 board was detected.

Detecting condition : When the diagnostic of each IC at turning on the power or shifting the operation mode is in abnormal state.

Sub error message : SX ENC
SX MEP
SX DEC

For diagnostic of DPR-87 board, refer to section 1-8 (menu number:C24) of maintenance manual part 2 volume 1.

Protecting operation : Displays only this error.

ERROR-92 INTERNAL INTERFACE ERROR 1 (INTERNAL I/F 1)

Description: Abnormality was detected in the communication between SYS1 CPU (IC106 on SY-259 board) and other CPU/MPU.

Sub error messages and Detecting conditions:

SY2: When the SYS2 CPU (IC108 on SY-260 board) initialization at turn on the power is in abnormal state.

KY: When the communication with KY-400 board's MPU (IC105) is in abnormal state.

DP: When the communication with DP-264 board's MPU (IC101) is in abnormal state.

Possible causes:

SY2:
- DIP switch (S201 on SY-260 board) setting defect
- Common RAM (IC400 on SY-259 board) or I/F bus circuit (IC402 through IC404) trouble
- System control system (IC451 through IC455 on SY-260 board) trouble

KY:
- Cable (between CN-1535 board and KY-400 board) connection defect or disconnection
- Cable (between MB-757 board and CN-1535 board) connection defect or disconnection
- Interface circuit (IC206 on SY-259 board) trouble
- Line receiver/transceiver (IC101 on KY-400 board) trouble
- KY-400 board's MPU (IC105) trouble

DP:
- Cable (between MB-757 board and KY-400 board) connection defect or disconnection
- MPU control interface circuit (IC209, IC307 and IC308 on SY-259 board) trouble
- KY-400 board's MPU (IC8) trouble

Protecting operations: When the sub error message is "**SY2**", enters the protection mode.
When it is except above, displays only this error.

ERROR-93 INITIALIZE ERROR (CPU INITIALIZE)

Description : Abnormality was detected in the communication between SERVO CPU (IC103 on SV-194 board) and DRUM MICOM (IC212/SV-194 board).

Detecting condition : When the diagnostic of each IC at turning on the power or shifting the operation mode is in abnormal state.

Sub error message and detecting condition :

DRUM : When the communication with DRUM MICOM (IC212 on SV-194 board) is in abnormal state.

Possible causes :
- MICOM control interface circuit (IC100, 108 on SY-259 board) trouble.
- DRUM MICOM (IC212 on SV-194 board) trouble.

Protecting operation : Displays only this error.

ERROR-96 SY NV-RAM ERROR (SY NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM (IC112 on SY-259 board) for the system control system was detected.

Sub error messages and Detecting conditions:

CURRENT SETUP: When the data error occurs in the setup menu current memory area during the data write or read .

SETUP BANK1: When the data error occurs in the setup menu bank 1 memory area during the data write or read.

SETUP BANK2: When the data error occurs in the setup menu bank 2 memory area during the data write or read.

SETUP BANK3: When the data error occurs in the setup menu bank 3 memory area during the data write or read.

SETUP BANK4: When the data error occurs in the setup menu bank 4 memory area during the data write or read.

ID CODE: When the data error occurs in the ID code memory area during the data write or read.

CALENDAR CLOCK: When the calendar/clock function was stopped.

Possible causes:
- NV-RAM (IC112 on SY-259 board) trouble
- Address decoder (IC117 on SY-259 board) trouble
- Backup battery inside NV-RAM is out of life

Protecting operations: When the error occurs in setting data of the setup menu, resets those data to the factory settings.
When the error occurs in ID data, resets the data to 00 00 00 00.
When the error occurs at the calendar/clock function, resets the date and time data to ’97 09 01 00 00 00 (Year, Month, Day, Hour, Minute, Second).

ERROR-97 SV NV-RAM ERROR (SV NV-RAM)

Description: The abnormal operation of an NV-RAM (SV-194 board) for the servo system was detected.

Detecting condition: When the checksum of NV-RAM data does not coincide during activation.

Sub error message: None

Possible cause: NV-RAM (IC114 on SV-194 board) trouble

Protecting operation: Enters the protection mode

ERROR-98 RF NV-RAM ERROR (RF NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM (EQ-72 or DM-114/114P board) for RF system was detected.

Sub error messages and Detecting conditions:

- **EQ**: When the error occurs in an NV-RAM (IC703 on EQ-72 board) during the data write or read.
- **DM**: When the error occurs in an NV-RAM (IC909 on DM-114/114P board) during the data write or read.
- **TBC**: When the error occurs in an NV-RAM (IC1812 on DM-114/114P board) during the data write or read.

Possible causes: Trouble of an NV-RAM indicated by sub error message

Protecting operation: None

ERROR-99 INTERNAL INTERFACE ERROR 2 (INTERNAL I/F 2)

Description: Abnormality was detected in the communication between SYS2 CPU (IC108 on SY-260 board) and SERVO CPU (SV-194 board) or MPU (on EQ-72, DM-114/114P, or SDI-23 board).

Sub error messages and Detecting conditions:

SV: When the SERVO CPU (IC401 on SV-194 board) initialization at turn on the power is in abnormal state.

EQ: When the communication with EQ-72 board's MPU (IC708) is in abnormal state.

DM: When the communication with DM-114/114P board's MPU (IC908) is in abnormal state.

TBC: When the communication with DM-114/114P board's MPU (IC1808) is in abnormal state.

SDI: When the communication with SDI-23 board's MPU (IC455) is in abnormal state.

Possible causes:

SV:
- DIP switch (S100 on SV-194 board) setting defect
- Common RAM (IC300 on SV-194 board) trouble
- Servo system (on SV-194 board) trouble

EQ:
- MPU control interface circuit (IC402, 459 and 460 on SY-260 board) trouble
- Interface buffers (IC702 and 704 on EQ-72 board) trouble
- EQ-72 board's MPU (IC708) trouble

DM:
- MPU control interface circuit (IC402, 459 and 460 on SY-260 board) trouble
- DM-114/114P board's MPU (IC908) trouble

TBC:
- MPU control interface circuit (IC402, 459 and 460 on SY-260 board) trouble
- DM-114/114P board's MPU (IC1808) trouble

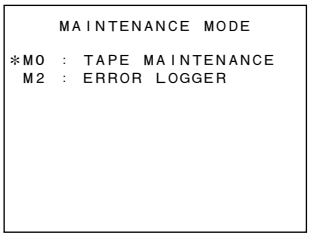
SDI:
- MPU control interface circuit (IC402, 459 and 460 on SY-260 board) trouble
- SDI-23 board's MPU (IC455) trouble

Protecting operations: When the sub error message is "**SV**", enters the protection mode.
When it is except above, displays only this error.

Section 3
Maintenance Mode

3-1. Overview of Maintenance Mode

This unit has the maintenance mode that is useful during maintenance and trouble diagnosis.
This maintenance mode consists of the two modes below. The contents of the maintenance mode are superimposed on the LCD monitor and the video monitor connected to the VIDEO OUTPUT 2 (SUPER) connector.
To superimpose the contents of the maintenance mode, set the SUPER item on the general setting page of the sub LCD menu to ON. (For the sub LCD menu. refer to the operation manual.)



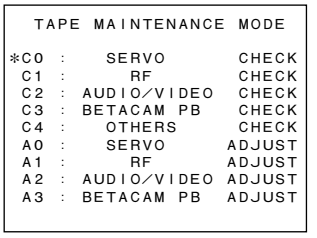
Note

The typeface of characters displayed on the video monitor differs from the actual one.

(Mode screen during activation of maintenance mode)

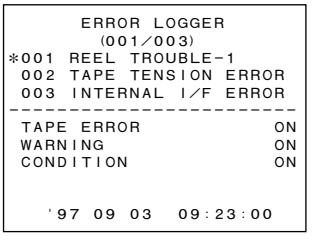
M0 : TAPE MAINTENANCE ..... (Section 3-2)

This mode is used for maintenance of a VTR part.
In this manual, explains tape maintenance items for operation check only.
For adjustment and others, refer to maintenance manual part 2 volume 1.



M2 : ERROR LOGGER ..... (Section 3-3)

This mode is used to display the record of errors (error logging) that occur in this unit.



Note

The display on the left is one of the displayed examples.

Buttons and Switches for Operation

The main buttons and switches related to the operation of maintenance mode are as follows: The ordinary functions of these buttons and switches and how to use them are described below.

① Message display area on sub LCD
The sub LCD displays the menu (mode) No., menu title, selection item, status, or data. The menu (mode) No. or selection item block blinks while the menu (mode) or selection item is specified (not including the servo menu in the TAPE maintenance mode). For manual adjustment, the data block blinks. In the state where the tape operation (PB, REC, F FWD, and REW) can be performed, the sub LCD functions as an ordinary time counter.
There is a menu (mode) that contains insufficient information displayed in the message display area of sub LCD. Since the information displayed on the LCD monitor is easier to operate and check, usually use a LCD monitor.

② MENU button
Push this button in the maintenance mode to return to the screen (state) preceding by one step.
The maintenance mode is terminated if this button is pushed when the mode screen is displayed (mode No. M0, or M2 blinks in a message display area of sub LCD).

③ SET button
Push this button in the maintenance mode to select or execute the menu (mode) selected using a ⑧ JOG dial.
The maintenance mode can be activated when this SET button is pushed while pressing the ④ CTL/TC/U-BIT button in the setup menu mode with ⑩ DIP switch S201-2 on the SY-259 board set to ON (upper).

④ CTL/TC/U-BIT button
The maintenance mode can be activated when the ③ SET button is pushed while pressing this button in the setup menu mode with ⑩ DIP switch S201-2 on the SY-259 board set to ON (upper).

⑤ RESET button
Push this button in the error logger mode to erase the recorded error log.

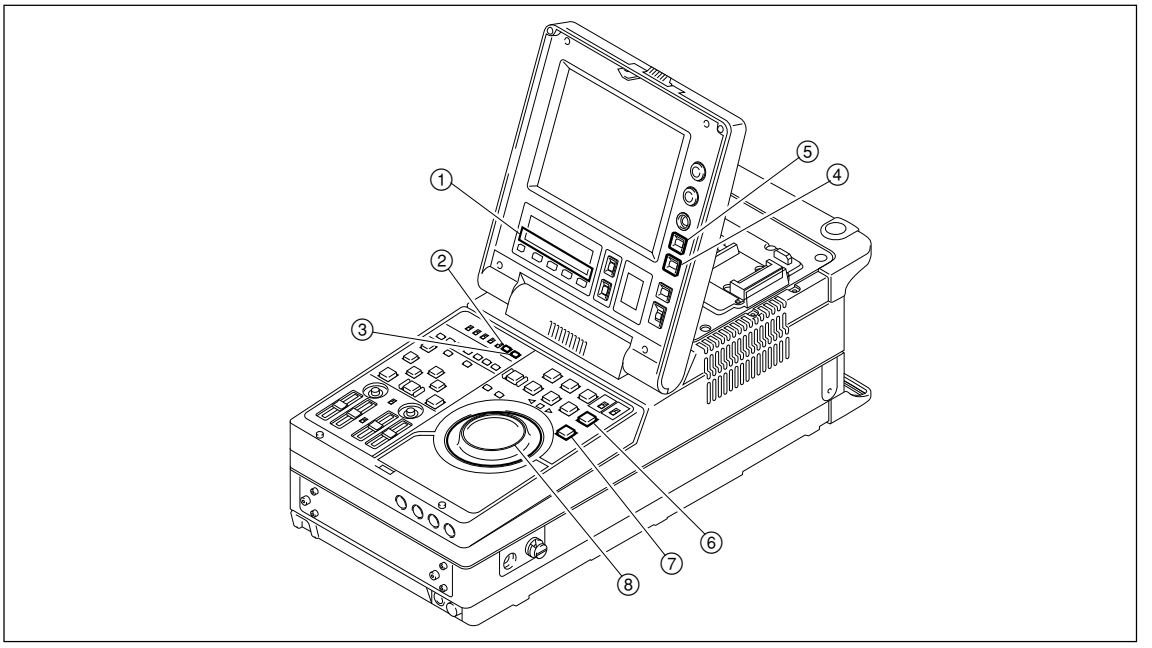
⑥ STOP button
The data value of an electronic volume control can be displayed only while the STOP button is pressed in RF system automatic adjustment menu.

⑦ Search button
The data value or setting can be changed when the ⑧ JOG/shuttle dial is turned while pressing this button.

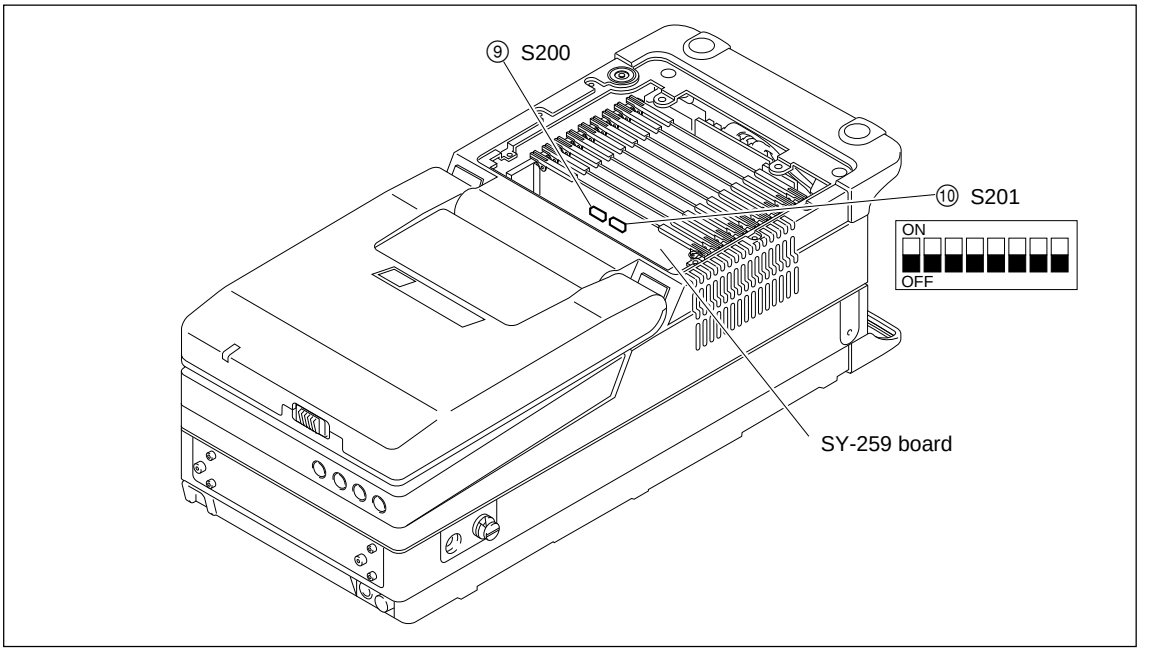
⑧ JOG shuttle dial
Turn the JOG dial or shuttle dial (depend on search mode) to specify the menu (mode) or selection item. A "*" mark moves on the LCD monitor. In a sub LCD, the display is replaced and the specified item blinks. ("JOG DIAL" is displayed on the LCD monitor.)
The data value or setting can be changed when the JOG dial or shuttle dial (depend on search mode) is turned while pressing the ⑦ search button.

⑨ S200/SY-259 board: Maintenance mode start switch (MAINTE MODE START)
Push this switch to activate the maintenance mode.

⑩ S201-2/SY-259 board: Maintenance mode access permission switch (MAINTE MODE Access)
Set this switch to ON in advance when activating the maintenance mode by the button operation on the control panel.



Lower Control Panel



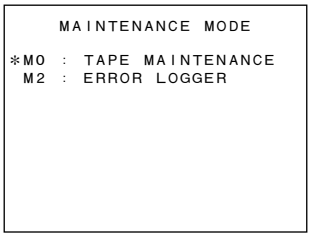
Location of Switches on SY-259 Board

Note

Remove the SY-259 board referring to Section 1-6-1 when operating the switches on the SY-259 board.
Change the setting of DIP switch S201 with the power switch set to OFF.

Activating the Maintenance Mode

(1) Push the ⑨ S200 switch (on the SY-259 board).
(2) The mode screen in the maintenance mode is superimposed on the LCD monitor.
In a ① sub LCD, “M0-TAPE MAINTEN” is displayed.



LCD Monitor

Sub LCD

Activating the Maintenance Mode from Control Panel

The maintenance mode can be activated by the operation below when the S201-2 switch (on the SY-259 board) is set to ON (upper).

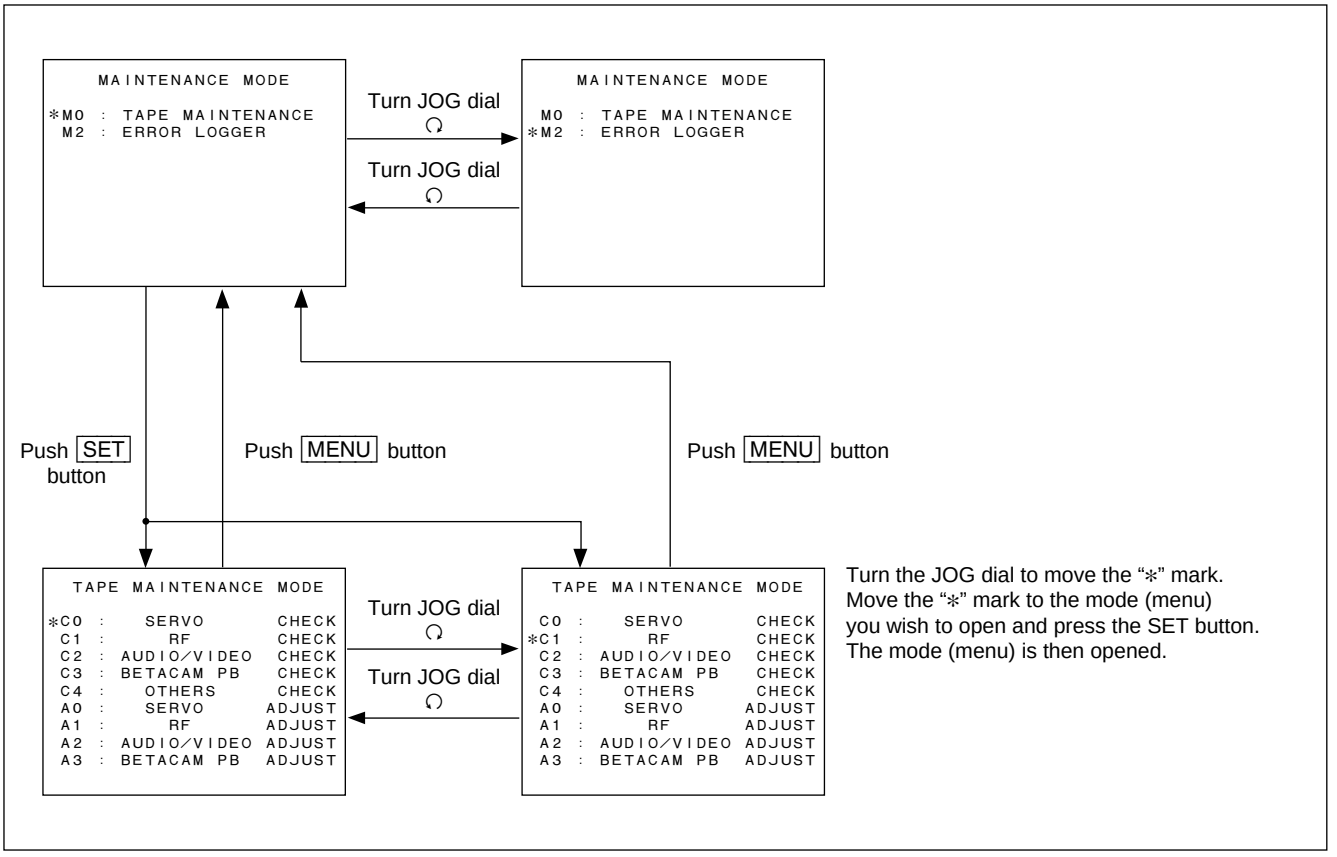
(1) Push the ② MENU button once.
(Execute the setup menu mode from the operation mode.)
(2) Push the ③ SET button while pressing the ④ CTL/TC/U-BIT button.
(Execute the maintenance mode from the setup menu mode.)
(3) The mode screen in the maintenance mode is displayed on the LCD monitor.

Terminating the Maintenance Mode

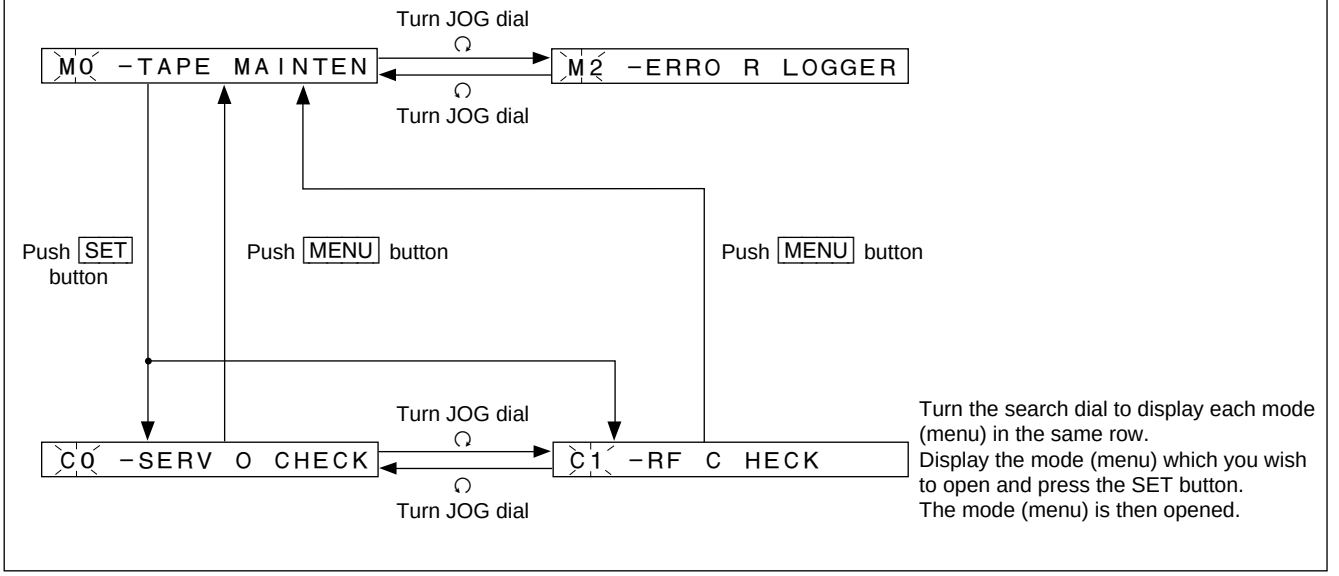
(1) Push the ② MENU button several times to display the mode screen on the video monitor.
The selected mode No. and title are displayed in a time counter.
(2) Push the ② MENU button again to terminate the maintenance mode.

Specifying the Menu (Mode) and Item

How to specify the menu (mode) and item using the JOG dial (JOG mode) is described below with the mode selection given as an example.



Example in Superimpose Picture



Example in sub LCD

3-2. TAPE Maintenance Mode (M0)

3-2-1. Overviews

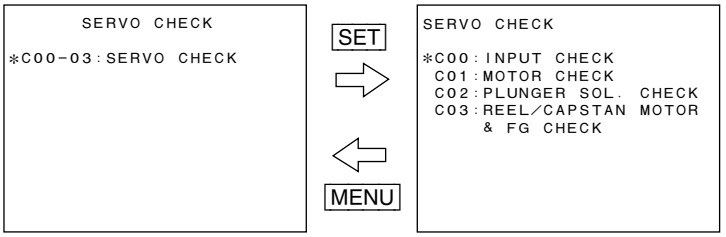
The TAPE maintenance mode is used for the maintenance and check of a VTR.
This unit has the nine submodes below.

```
  TAPE MAINTENANCE MODE

*C0 :    SERVO       CHECK
 C1 :      RF        CHECK
 C2 : AUDIO/VIDEO   CHECK
 C3 : BETACAM PB    CHECK
 C4 :   OTHERS      CHECK
 A0 :    SERVO      ADJUST
 A1 :      RF       ADJUST
 A2 : AUDIO/VIDEO  ADJUST
 A3 : BETACAM PB   ADJUST
```

TAPE Maintenance Mode

C0: SERVO CHECK

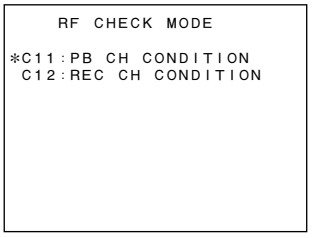
This submode is used to check the servo system of a VTR.
For more details, refer to Section 3-2-2.



Title	Page	Description
C00 : INPUT CHECK	—	Check menu of sensors (not including a part of sensors)
C000 : CASSETTE SW	3-15	Checks the cassette tab and REC inhibit sensors.
C001 : CASSETTE COMP. LOCK SW	3-16	Checks the cassette-in and cassette size sensors.
C002 : TOP/END SENSOR	3-17	Checks the tape top and tape end sensors.
C003 : DEW SENSOR	3-18	Checks the dew condensation sensors.
C01 : MOTOR CHECK	—	Check menu of motors (except a fan motor) and partial sensors
C010 : S REEL MOTOR	3-19	Checks the S reel motor.
C011 : FUNCTION CAM MOTOR	3-20	Checks the threading motor and threading/unthreading end sensors.
C012 : CAPSTAN MOTOR	3-22	Automatically checks the capstan motor.
C013 : DRUM MOTOR	3-23	Automatically checks the drum motor.
C02 : PLUNGER SOL. CHECK	—	Check menu of solenoids
C020 : S REEL BRAKE	3-24	Checks the S reel brake solenoid.
C03 : REEL/CAPSTAN MOTOR & FG CHECK	3-25	Continuous check menu of reel and capstan motors

C1 : RF CHECK

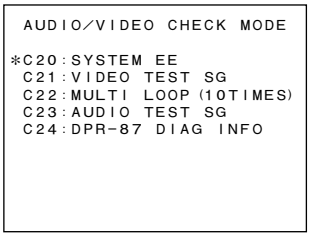
This submode is used to check the RF system.
For more details, refer to Section 3-2-3.



Title	Page	Description
C11 : PB CH CONDITION	3-27	Checks the error condition for each PB head (A1, A2, A3, B1, B2, B3) on a drum in the PB mode.
C12 : PEC CH CONDITION	3-32	Checks the error condition for each PB head (A1, A2, A3, B1, B2, B3) on a drum in the REC mode.

C2 : AUDIO/VIDEO CHECK

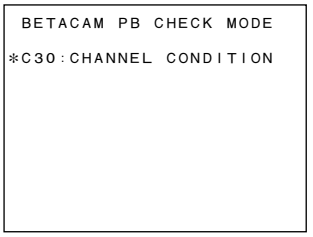
This submode is used to check the audio and video systems.
For more details, refer to Section 3-2-4.



Title	Page	Description
C20 : SYSTEM EE	3-37	Sets the system E-E function in the maintenance mode.
C21 : VIDEO TEST SG	3-38	Sets the video test signal generator incorporated into this unit.
C22 : MULTI LOOP	3-39	Sets the multi-loop function in the maintenance mode.
C23 : AUDIO TEST SG	3-40	Sets the audio test signal generator incorporated into this unit.
C24 : DPR-87 DIAG INFO	—	Displays the result of self diagnostic in DPR-87 board. (Refer to maintenance manual part 2 volume 1.)

C3 : BETACAM PB CHECK

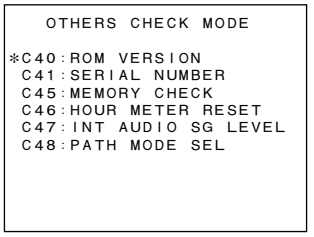
This submode is used to check the PB system based on a Betacam/Betacam SP format.
This menu is displayed only for player.
For more details, refer to Section 3-2-5.



Title	Page	Description
C30 : CHANNEL CONDITION	3-41	Checks the RF level condition for each video channel (Y and C) to be played back.

C4 : OTHERS CHECK

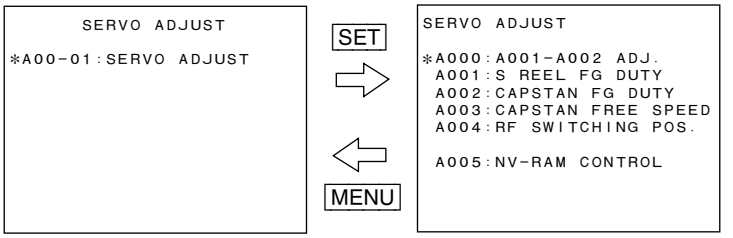
This submode is used for other checks.
For more details, refer to Section 3-2-6.



Title	Page	Description
C40 : ROM VERSION	3-44	Displays the unit's model name, ROM version, and optionally mounted board.
C41 : SERIAL NUMBER	3-45	Displays and corrects the serial number of this unit.
C45 : MEMORY CHECK	—	Displays the data in ROM. (Used for check at the factory.) (Refer to maintenance manual part 2 volume 1.)
C46 : HOUR METER RESET	3-47	Displays and resets the resettable hours meter and thread counter.
C47 : INT AUDIO SG LEVEL	3-48	Sets the internal audio SG level.
C48 : PATH MODE SEL	3-49	Sets the tape PB mode. (Used for tape transport adjustment.)

A0 : SERVO ADJUST

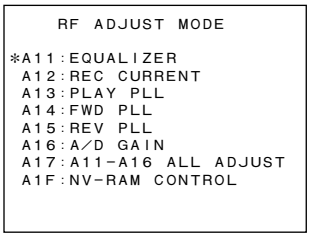
This submode is used to adjust the servo system of a VTR.
For more details, refer to maintenance manual part 2 volume 1.



Title	Page	Description
A000 : A001-A002 ADJ.	—	Continuously executes the automatic adjustment menus (A001 to A002).
A001 : S REEL FG DUTY	—	Automatically adjusts the duty ratio of an S reel FG.
A002 : CAPSTAN FG DUTY	—	Automatically adjusts the duty ratio of a capstan FG.
A003 : CAPSTAN FREE SPEED	—	Automatically adjusts the capstan free speed.
A004 : RF SWITCHING POS.	—	Automatically adjusts the RF switching position.
A005 : NV-RAM CONTROL	—	Saves the adjustment data in a servo system.

A1 : RF ADJUST

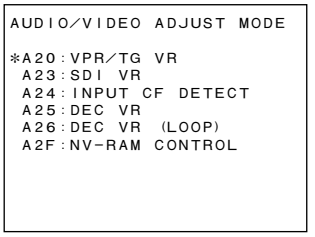
This submode is used to adjust the RF system.
For more details, refer to maintenance manual part 2 volume 1.



Title	Page	Description
A11 : EQUALIZER	—	Automatically adjusts the PB head playing back level and PB equalizer (for A1, A2, A3, B1, B2, and B3 channels).
A12 : REC CURRENT	—	Automatically adjusts the recording current.
A13 : PLAY PLL	—	Automatically adjusts the PB PLL circuit (in the PLAY mode).
A14 : FWD PLL	—	Automatically adjusts the PB PLL circuit (in the FORWARD mode).
A15 : REV PLL	—	Automatically adjusts the PB PLL circuit (in the REVERSE mode).
A16 : A/D GAIN	—	Automatically adjusts the gain when a PB RF signal is converted from analog to digital.
A17 : A11-A16 ALL ADJUST	—	Continuously executes the above automatic adjustment menus A11 to A16.
A1F : NV-RAM CONTROL	—	Saves the adjustment data in an RF system.

A2 : AUDIO/VIDEO ADJUST

This submode is used to adjust the audio and video systems.
For more details, refer to maintenance manual part 2 volume 1.



Title	Page	Description
A20 : VPR/TG VR	—	Adjusts the reference signal system and analog video output system on the VPR-34 and TG-191/191P boards.
A23 : SDI VR	—	Adjusts the SDI input/output interface.
A231 : SDI ENC VCO	—	Automatically adjusts the SDI output interface.
A232 : SDI DEC VCO	—	Automatically adjusts the SDI input interface.
A24 : INPUT CF DETECT	—	Automatically adjusts the color frame detection timing of a composite video input.
A25 : DEC VR	—	Adjusts the composite video input system.
A26 : DEC VR (LOOP)	—	Adjusts the composite video input (in the multi-loop state).
A27 : VIDEO METER	—	Calibration of video meter on the sub LCD.
A2F : NV-RAM CONTROL	—	Saves the adjustment data in audio and video systems.

A3 : BETACAM PB ADJUST

This submode is used to adjust the PB system based on a Betacam/Betacam SP format.
For more details, refer to maintenance manual part 2 volume 1.

```
 BETACAM PB ADJUST MODE

*A30:EQ VR
 A32:DM VR 1
 A33:DM VR 2
 A34:DM VR 3
 A35:DM VR 4
 A36:DM VR 5
 A37:TBC VR
 A3F:NV-RAM CONTROL
```

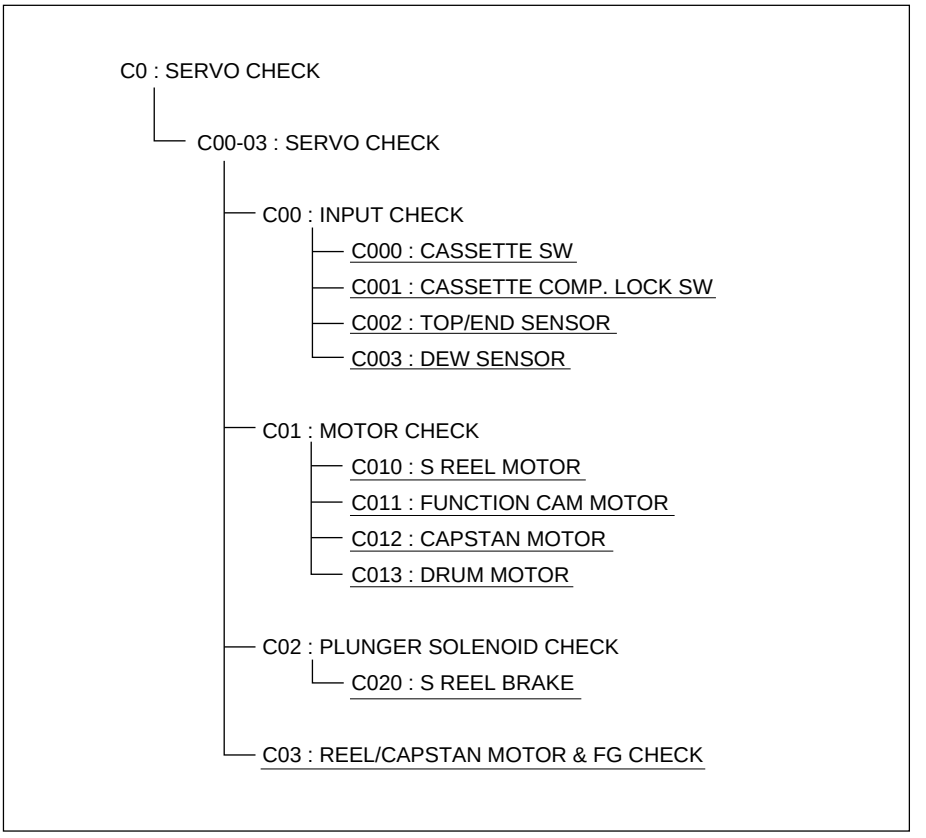
Title	Page	Description
A30 : EQ VR	—	Adjusts the gain of an analog Betacam PB RF amplifier (EQ-72 board).
A32 : DM VR 1	—	Adjusts the frequency characteristics of a primary cosine equalizer (DM-114/114P board).
A33 : DM VR 2	—	Adjusts the frequency characteristics of a secondary cosine equalizer (main) (DM-114/114P board).
A34 : DM VR 3	—	Adjusts the frequency characteristics of a secondary cosine equalizer (sub) (DM-114/114P board).
A35 : DM VR 4	—	Adjusts the guard band width and sets the DC offset level of an over-modulation compensation circuit.
A36 : DM VR 5	—	Adjusts the threshold level of a dropout and sets the threshold level of an RF envelope.
A37 : TBC VR	—	Sets the read clock timing on the DM-114/114P board and the data of a PB VISC phase detection circuit.
A3F : NV-RAM CONTROL	—	Saves the adjustment data in an analog Betacam PB system.

3-2-2. SERVO CHECK Mode (C0)

The C0: SERVO CHECK mode is used to check the servo system of a VTR. The underlined menus and submenus in the menu tree below are described next.

Note

In the servo check mode, only the menu number is displayed in a sub LCD. (C00-03 is displayed as “C00”.)



Menu Tree of Servo System Check Mode

Note

A cassette tape is automatically ejected if it has been inserted into this unit when the C00-03 : SERVO CHECK screen is shifted to the lower-level menu.

C000 : CASSETTE SW

This submenu checks the functions of cassette tab sensors and REC inhibit sensors (switches).

```
 INPUT CHECK

C000:CASSETTE SW
 1:REEL HUB   2:METAL/OX
 3:THICKNESS  4:SPARE
 5:SPARE      6:DGTL/ANLG
 7:S REC INH

                  7  1 3
 SW 7654321          425
    0000000           6
```

(1) Press each sensor (switch) with fingers.
- Confirm that “0” below the corresponding switch number changes to “1”.

(2) Release the fingers.
- Confirm that “1” below the corresponding switch number returns to “0”.

(Ex.: When pushing the switch ⑦)

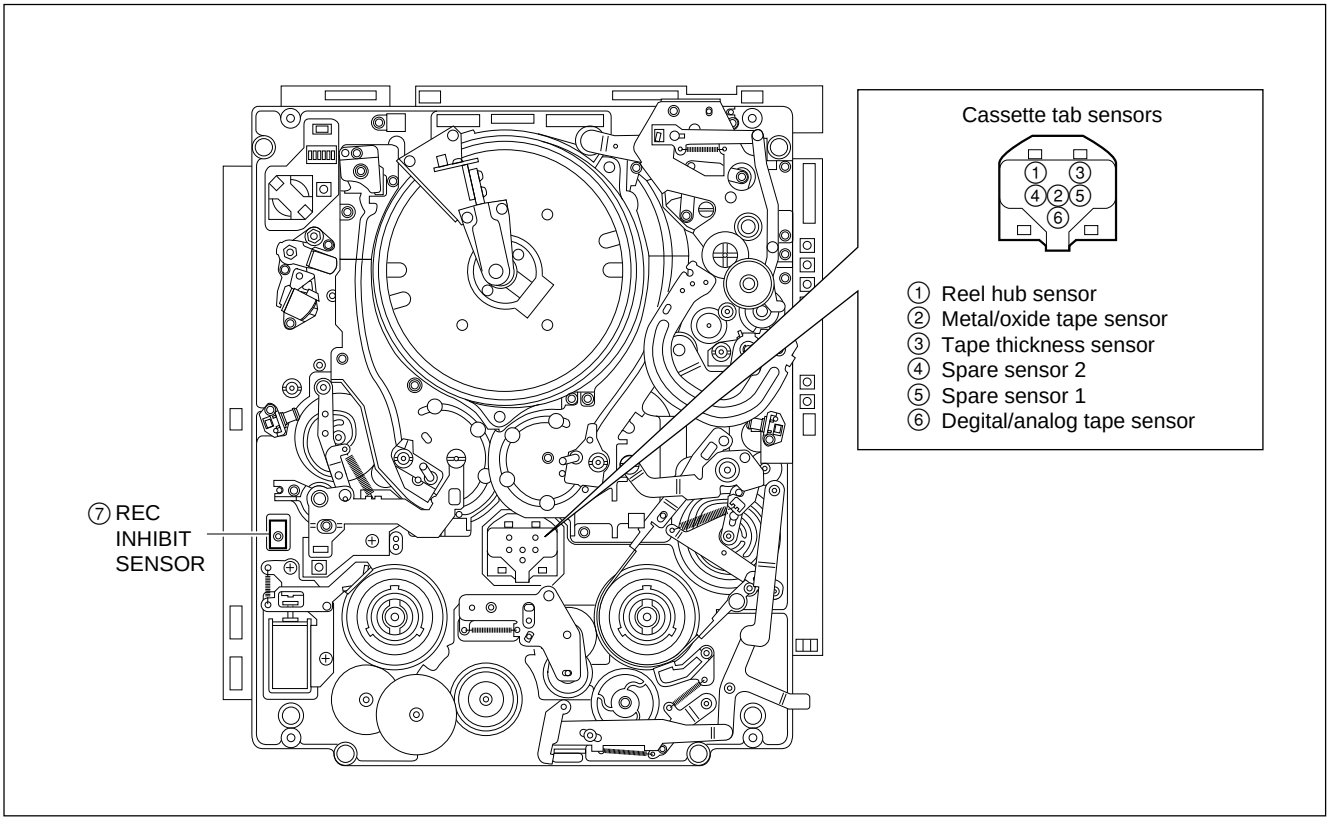
```
 INPUT CHECK

C000:CASSETTE SW
 1:REEL HUB   2:METAL/OX
 3:THICKNESS  4:SPARE
 5:SPARE      6:DGTL/ANLG
 7:S REC INH

                  7  1 3
 SW 7654321          425
    1000000           6
```

(3) Push the MENU button when terminating the check.

In case of NG

When cassette tab sensors (① to ⑥) are NG
- Check the corresponding sensor (S400 to S405) on the SV-194 board.
- Check the sensor input port of CPU (IC401 on the SV-194board).

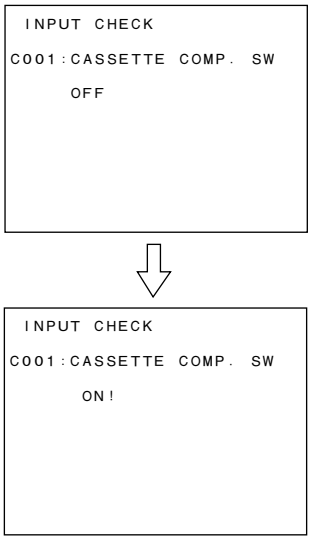
When REC inhibit sensor (⑦) is NG
- Check the sensor (S406) on the SV-194 board.
- Check the sensor input port of CPU (IC401 on the SV-194 board).



Locations of Sensors (Switches)

C001 : CASSETTE COMP. LOCK SW

This submenu checks the locking switch function of a compartment.

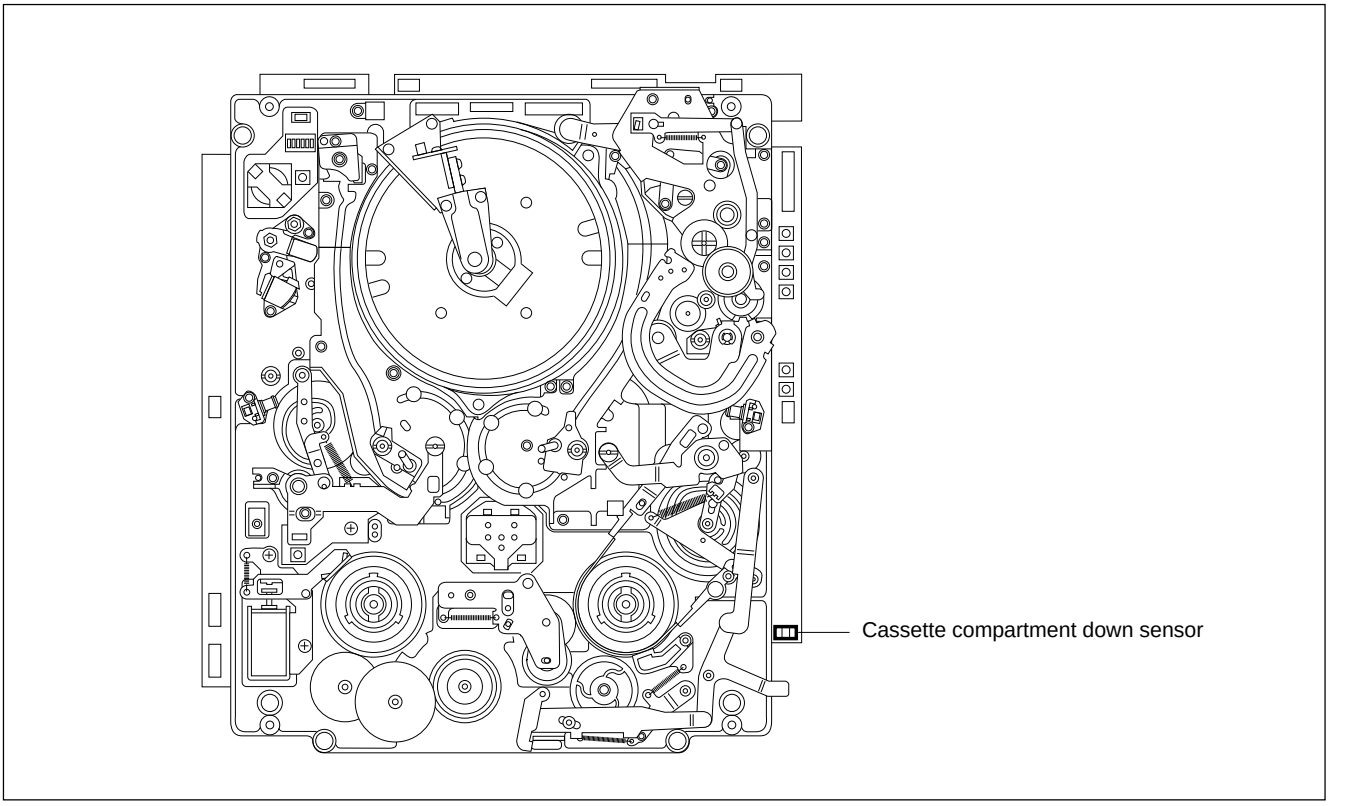


(1) Push down the cassette compartment.
- Confirm that the message on the LCD monitor from “OFF” to “ON!”.

(2) Push the MENU button when terminating the check.

In case of NG

- Check the cassette compartment down sensor on the SV-194 board.
- Check the sensor input port of CPU (IC304 on the SV-194 board).



Cassette compartment down sensor

C002 : TOP/END SENSOR

This submenu checks the functions of a tape top sensor and tape end sensor.

```
 INPUT CHECK
C002:TOP/END SENSOR

   END          TOP
 SENSOR       SENSOR

   OFF          OFF
```

(1) Bring a metallic screwdriver near each sensor.
- Confirm that the characters below the corresponding sensor change from "OFF" to "ON!".

CAUTION

Never bring the screwdriver into contact with each sensor.

(2) Keep the screwdriver away from each sensor.
- Confirm that the characters below the corresponding sensor return from "ON!" to "OFF".

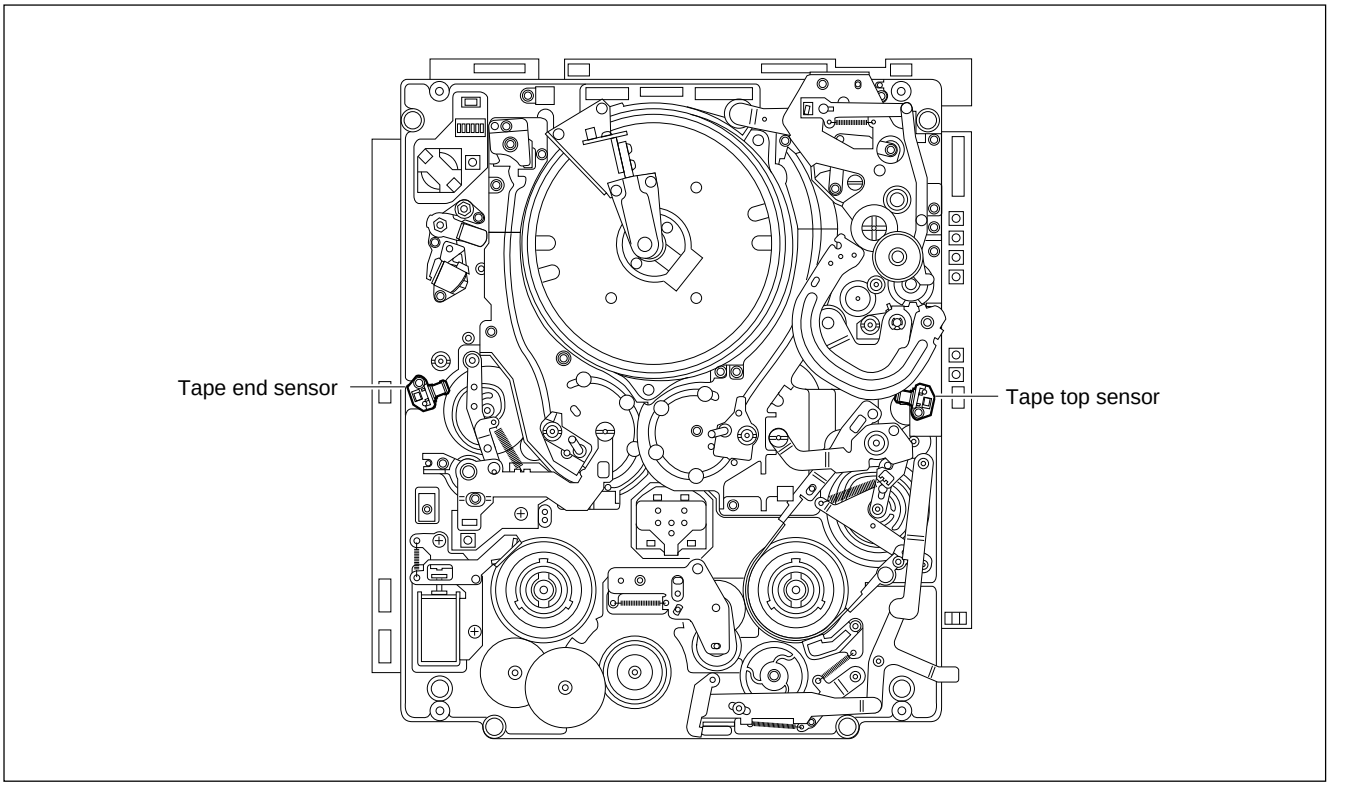
(Ex.)

```
 INPUT CHECK
C002:TOP/END SENSOR

   END          TOP
 SENSOR       SENSOR

   OFF          ON!
```

(3) Push the MENU button when terminating the check.

In case of NG

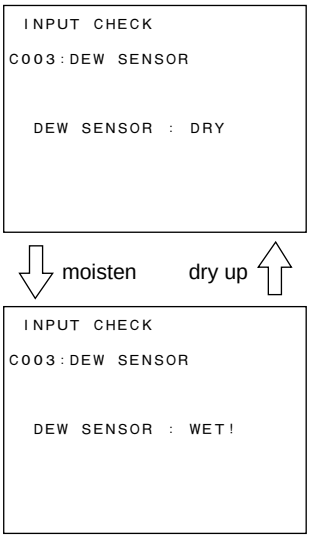
- Check each sensor itself.
- Check the oscillator and detection circuit (IC405 on the SV-194 board) for sensors.
- Check the sensor input port of CPU (IC116 on the SV-194 board).



Locations of Tape Top and Tape End Sensors

C003 : DEW SENSOR

This submenu checks the function of a dew condensation sensor.



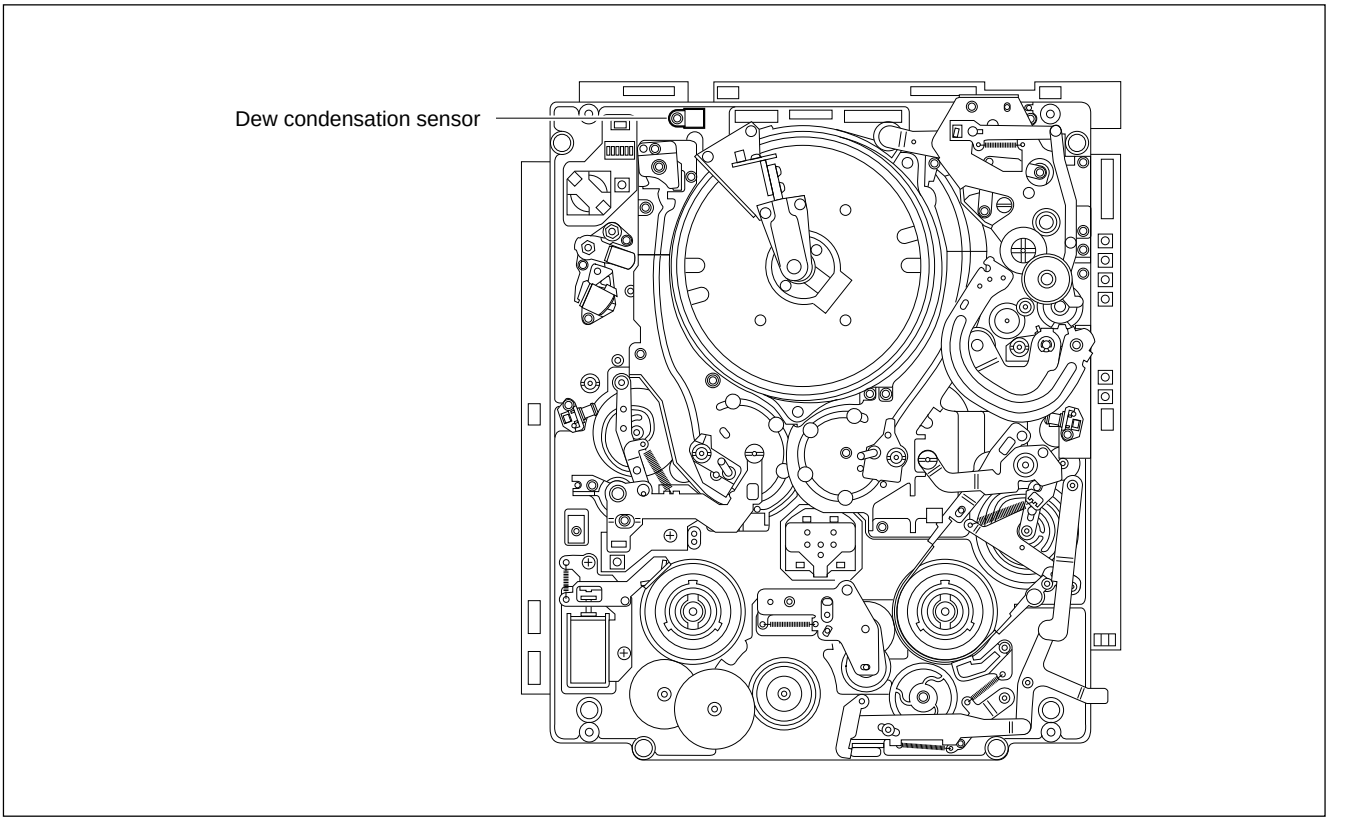
(1) Touch the sensor slightly with the cotton swab moistened with water.
- Confirm that the “DRY” characters change to “WET!”.

(2) Wipe the sensor with a dry cotton swab to eliminate the moisture or evaporate moisture completely using a blower.
- Confirm that the “WET!” characters return to “DRY”.

(3) Push the MENU button when terminating the check.

In case of NG

- Check the sensor itself.
- Check the detection circuit (on the SV-194 board).
- Check the sensor input port of CPU (IC401 on the SV-194 board).



Location of Dew Condensation Sensor

C010 : S REEL MOTOR

This menu checks the function of an S reel motor.

```
 MOTOR CHECK
C010:S REEL MOTOR


 TURN JOG DIAL
      IN JOG MODE
```

(1) Turn the JOG dial (JOG mode) in FORWARD (↻) or REVERSE (↺) direction. Confirm that the reel table rotates in the specified direction at a fixed speed (about one turn per second) after the reel brake is released.

JOG dial	Rotation direction of reel table
FORWARD (↻)	Clockwise (↻)
REVERSE (↺)	Counterclockwise (↺)

(2) Stop the rotation of the JOG dial and confirm that the reel table stops and that the reel brake operates.

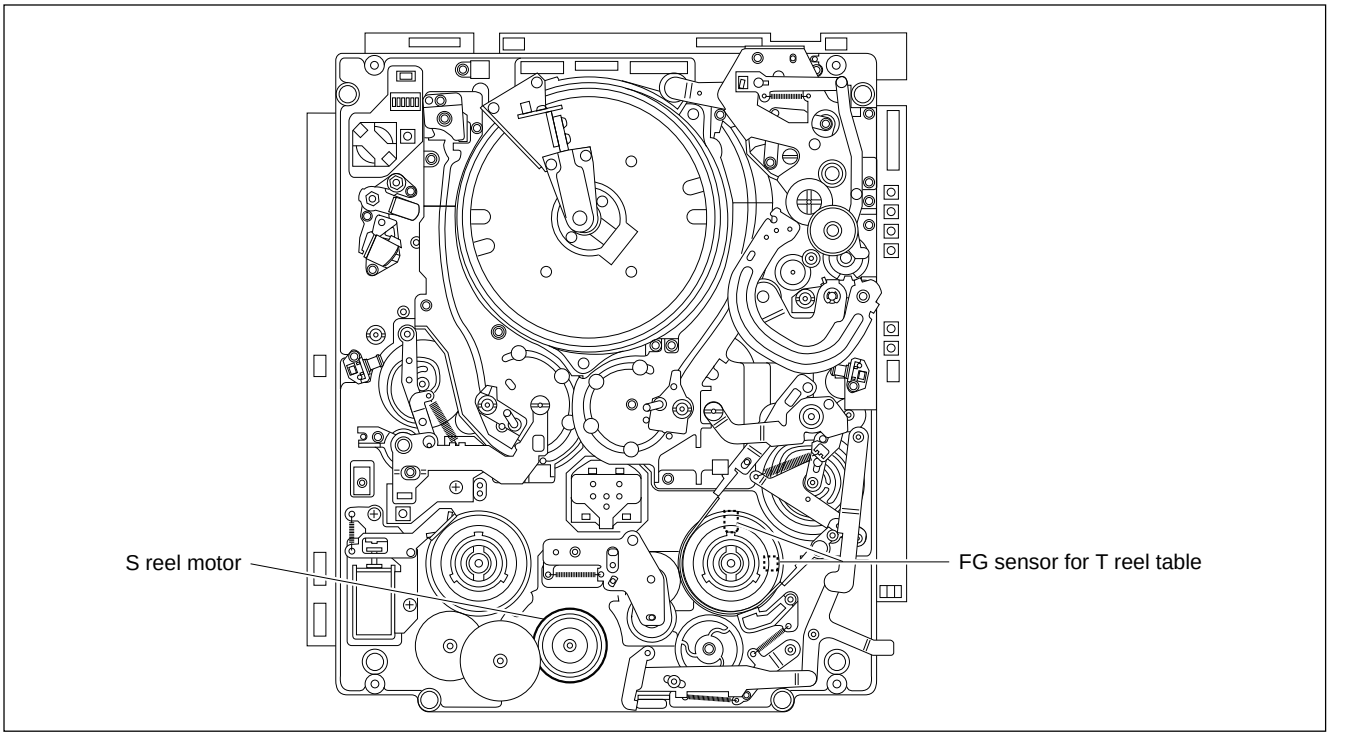
(3) Push the MENU button when terminating the check.

In case of NG

When the reel table operation is defective
- Check the S reel motor drive circuit (on the SV-194 board).
- Check the S reel motor.

When the reel table is not constant at a rotation speed
- Adjust the duty ratio of an S reel FG. (A001)
- Check the FG output from a T reel table FG sensor.
- Check the FG output from a S reel motor.
- Check the reel FG shaping circuit (on the SV-194 board).

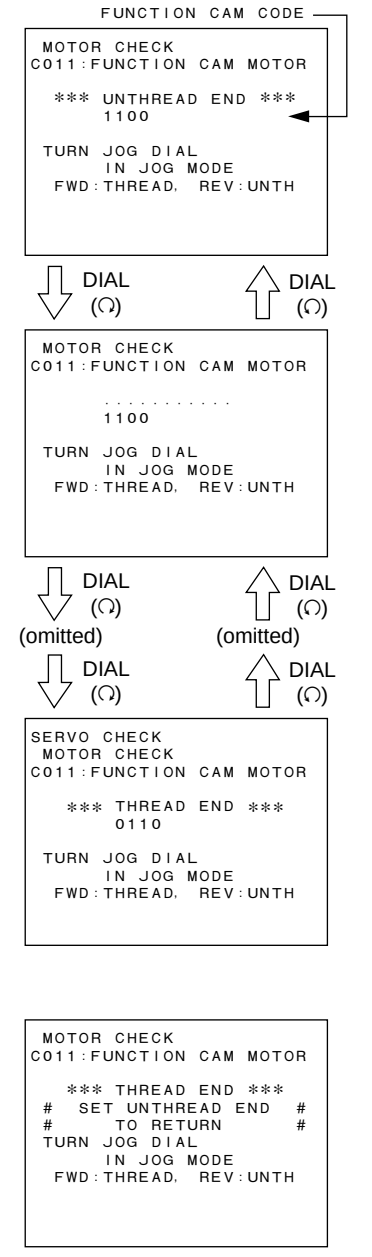
When the brake solenoid operation is defective
- Check the S brake solenoid. (C021)



Locations of Reel Table FG Sensors

C011 : FUNCTION CAM MOTOR

This menu checks the functions of a function cam.



(1) Turn the JOG dial (JOG mode) slowly in FORWARD (↻) direction.
- Confirm that the threading motor rotates and that the threading link moves unthreading direction and stops in the threading end state.
- Confirm that the LCD monitor changes as described below.
  (Check that the function cam code changes following the table in next page.)
  UNTHREAD END ⇨ ..... ⇨ (omitted) ⇨ THREAD END
  1100 1100 0110

Note

The threading motor also stops when the rotation of the JOG dial stops.

(2) Turn the JOG dial (JOG mode) slowly in REVERSE (↺) direction.
- Confirm that the threading motor rotates and that the threading link moves threading direction and stops in the unthreading end state.
- Confirm that the LCD monitor changes as described below.
  (Check that the function cam code changes following the table in next page.)
  THREAD END ⇨ ..... ⇨ (omitted) ⇨ UNTHREAD END
  0110 0100 1110

Note

The function cam also stops when the rotation of the JOG dial stops.

(3) To terminate the check, return to the unthreading end state and push the MENU button.

Note

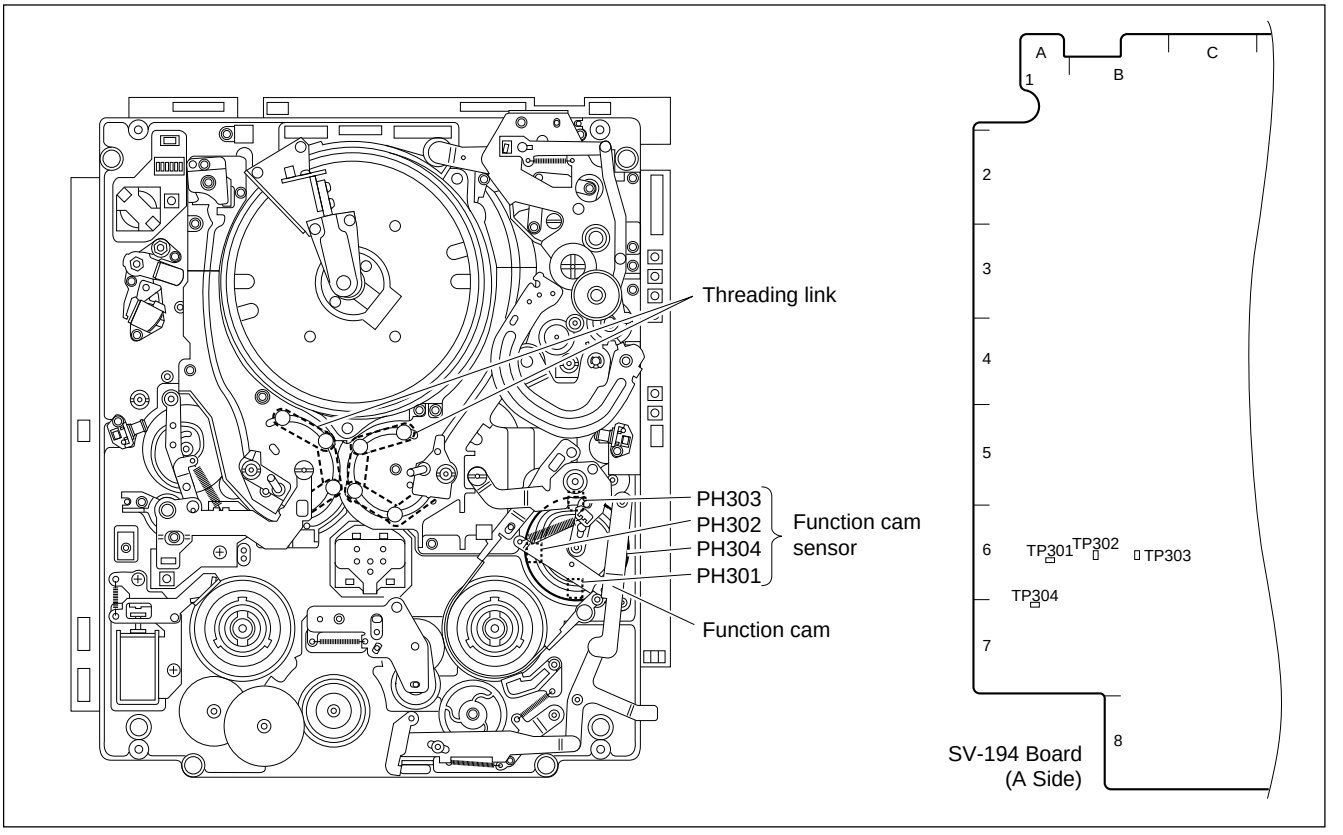
Message “SET UNTHREAD END TO RETURN” is displayed if the threading ring is not in the unthreading end state when the MENU button is pushed.

In case of NG

- Confirm that no mechanical abnormality exists.
- Check the function cam sensor (on the SV-194 board).
- Check the function cam sensor circuit (on the SV-194 board).
- Check the function cam motor drive circuit (on the SV-194 board).
- Check the function cam motor.

Code transition of the function cam

State of sensors (on the SV-194 board)				Condition of this unit
PH304	**PH303**	**PH302**	**PH301**	
(TP304)	(TP303)	(TP302)	(TP301)	
1	1	1	0	UNTHREAD END
1	1	0	0	
1	1	0	1	THEADING
1	0	0	1	
1	0	0	0	
1	0	1	0	
1	0	1	1	
0	0	1	1	
0	0	1	0	
0	0	0	0	
0	0	0	1	
0	1	0	1	UNTHREADING
0	1	0	0	
0	1	1	0	THREAD END



Locations of Threading End and Unthreading End Sensors

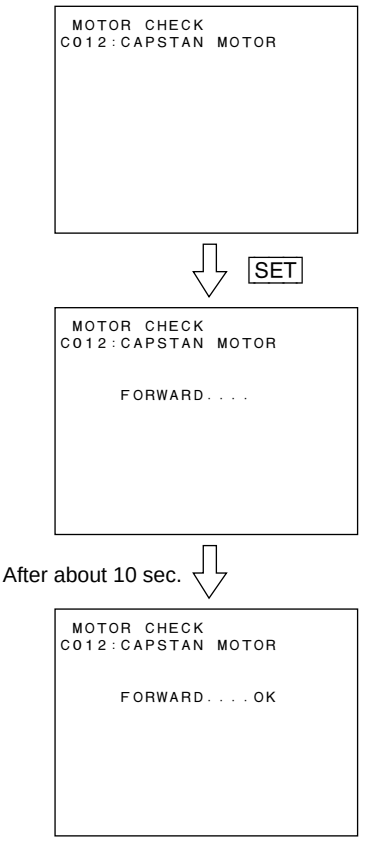
C012 : CAPSTAN MOTOR

This menu checks the function of a capstan motor.

(1) Push the SET button.
- Confirm that the capstan shaft rotates in the forward (↻) direction.
- Confirm that message “FORWARD....OK” is displayed on the LCD monitor and that the capstan shaft stops.

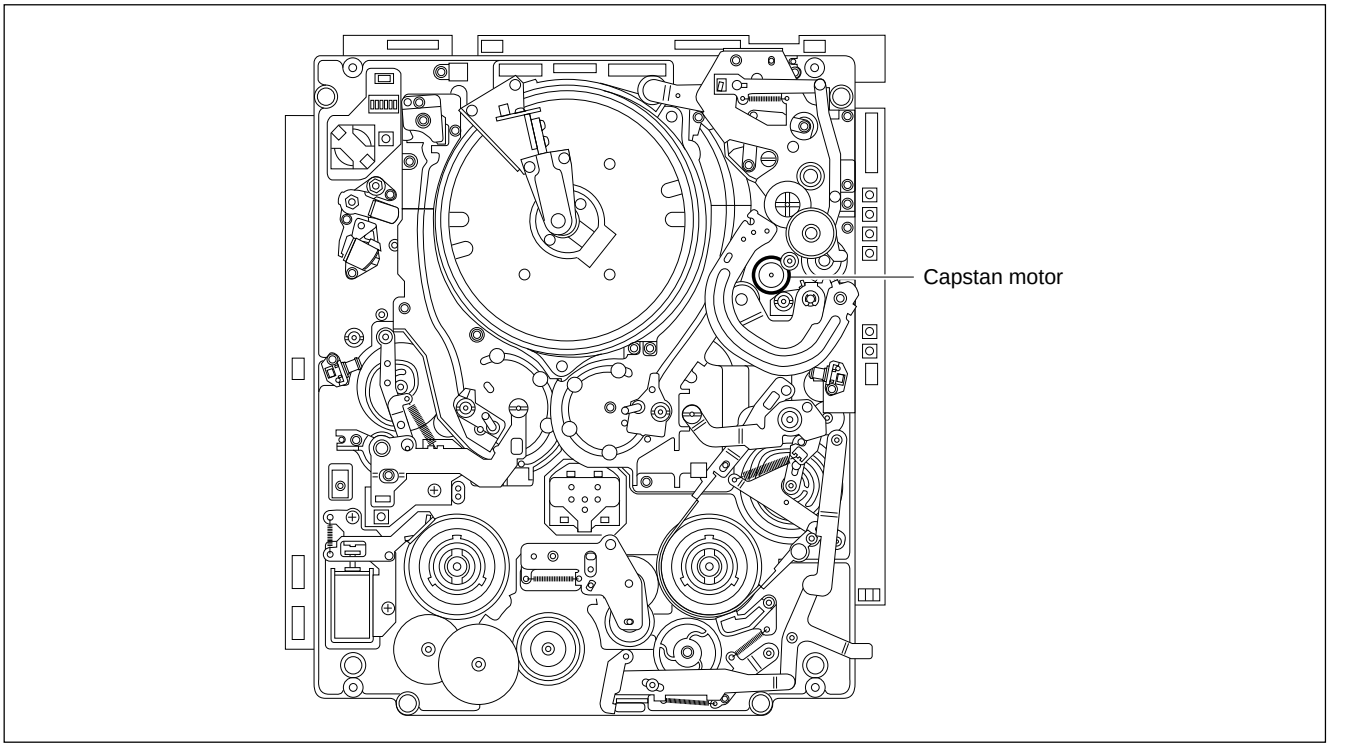
(2) Push the SET button again.
- Confirm that the capstan shaft rotates in the reverse (↺) direction.
- Confirm that message “REVERSE....OK” is displayed on the LCD monitor and that the capstan shaft stops.

(3) Push the MENU button when terminating the check.



In case of NG

- Confirm that no mechanical abnormality exists.
- Check the capstan motor drive circuit (on the SV-194 board).
- Check the FG output from a capstan motor.
- Check the capstan FG shaping circuit (on the SV-194 board).
- Check each circuit that processes the capstan FG on the SV-194 board.
- Check the capstan motor.



Location of Capstan Shaft

C013 : DRUM MOTOR

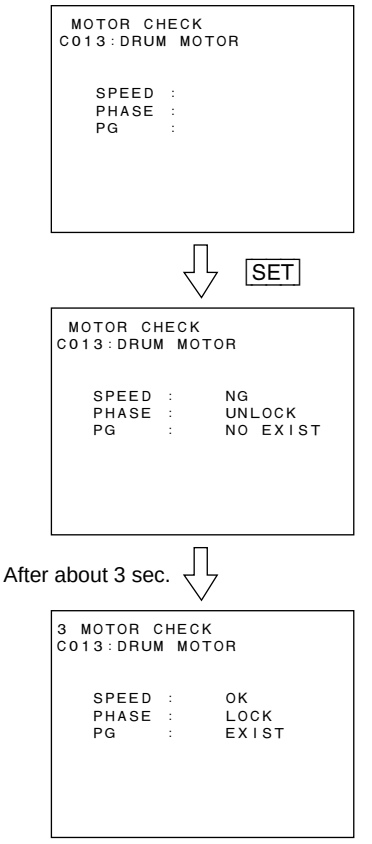
This menu checks the function of a drum motor.

(1) Push the SET button.
- Confirm that the drum rotates.
- Confirm that the LCD monitor changes as shown on the right.

(2) Push the MENU button when terminating the check.
- Confirm that the drum stops.

In case of NG

- Confirm that no mechanical abnormality exists.
- Check the drum motor drive circuit (on the SV-194 board).
- Check the FG and PG outputs from a drum motor.
- Check each circuit that processes the drum FG/PG on the SV-194 board.



C020 : S REEL BRAKE

This menu checks the function of an S reel brake solenoid.

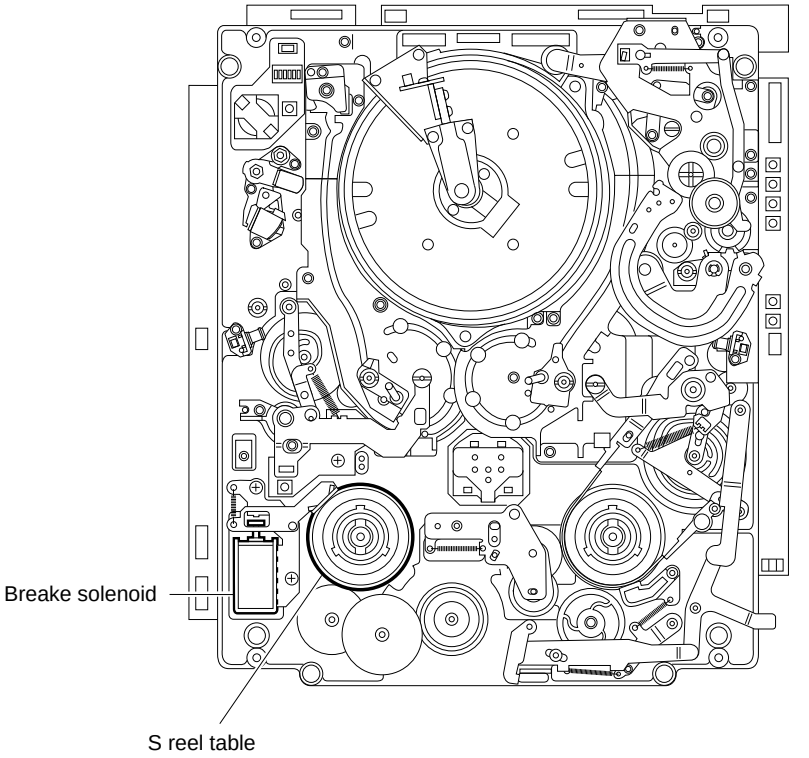
```
 PLUNGER SOLENOID
C020:S REEL BRAKE
```

(1) Push the SET button.
- Confirm with sound that the reel brake solenoid is turned on. (The reel table can be lightly turned with hand because the brake is in the OFF state.)

(2) Push the MENU button.
- The check menu is terminated.
- Check that the brake is applied to the reel table against the rotation of clockwise that the reel brake solenoid was turned off.

In case of NG

- Confirm that no mechanical abnormality exists.
- Check the drive circuit of the reel brake solenoid (on the SV-194 board).
- Check the reel brake solenoid itself.



Locations of Reel Brake Solenoids

C03 : REEL/CAPSTAN MOTOR & FG CHECK

This menu checks the following items automatically and continuously.
- S reel FG duty ratio (C031 : S REEL FG/MOTOR CHECK)
- Capstan FG duty ratio (C033 : CAPSTAN FG/MOTOR CHECK)

(1) Select C03 in the servo check mode and push the SET button to start the check.
- The item name to be checked is displayed on the LCD monitor, and the menu number (C031 and C032) is displayed in a sub LCD.

(2) Confirm that all checks are completed and that message “CHECK COMPLETE” is displayed.
If message “# CHECK INCOMPLETE #” is displayed halfway, refer to the NG cases during check below.

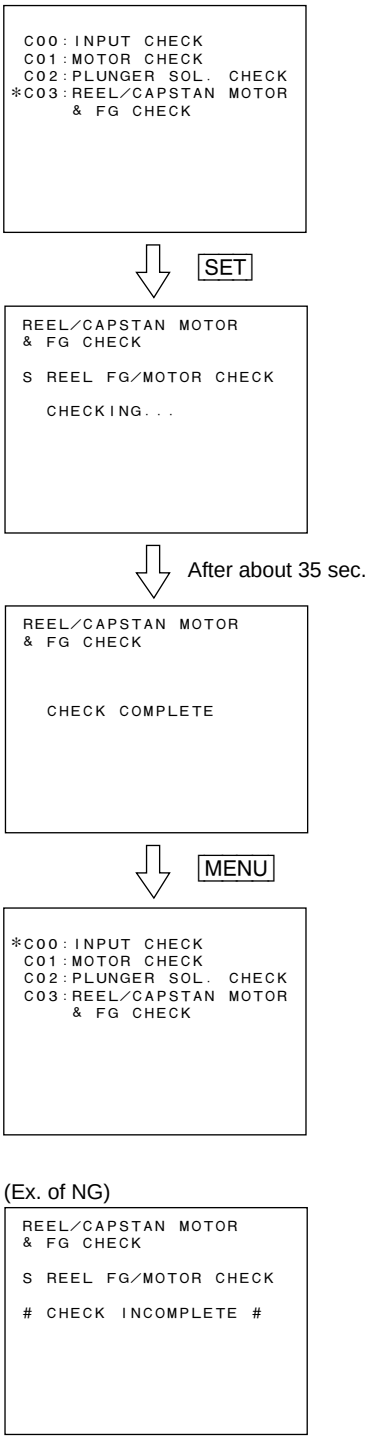
(3) Push the MENU button to return to the selection of the servo check mode.

For NG during (C031) S REEL FG/MOTOR CHECK

Perform the S reel motor check (C010). If no abnormality is found in the motor or its drive circuit, perform the S reel FG duty adjustment (A001).

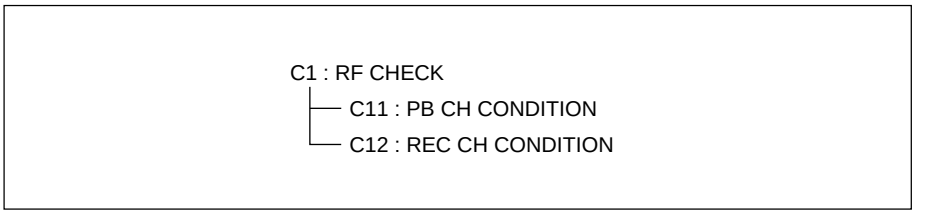
For NG during (C032) CAPSTAN FG/MOTOR CHECK

Perform the capstan motor check (C014). If no abnormality is found in the motor or its drive circuit, perform the capstan FG duty adjustment (A003).



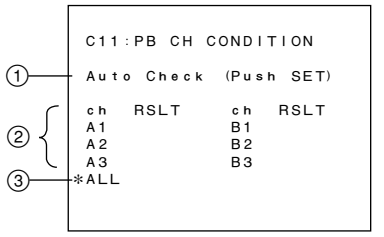
3-2-3. RF CHECK Mode (C1)

The C1 : RF CHECK mode is used to check the PB RF system based on an Betacam SX format.



Menu Tree of RF System Check Mode

C11 : PB CH CONDITION



In this menu, the error condition for each channel is displayed in three steps (GRN, YEL, and RED) when the tape recorded based on a Betacam SX format is played back by tracking.
C11 checks using the PB signal from the PB heads (A1, A2, A3, B1, B2, and B3 channels) in the PB mode.

Notes

- During normal played back operation, the tape is played back by non-tracking. Therefore, the condition for each channel cannot be confirmed using a CH CONDITION indicator.
- If abnormality exists in the servo system of a VTR, each menu of C1 : RF CHECK does not function normally.

Description of LCD monitor

① The display in this line changes. Each display and its meaning are described below.
Auto Check (Push SET) : Push the SET button to start the check.
Insert SR5-1 : Insert an alignment tape.
Auto Tracking... : Tracking is in an optimization process.
Auto Checking... : Check is in progress.
Auto Check Complete : Check is completed.
Auto Check Failure : Check failure
Condition NG : Error condition defect

② Select using a * mark when checking the condition for each channel.
After the check is completed, the condition (GRN, YEL, or RED) is displayed on the right of a channel name. “RED” is displayed even if the check fails.

Note

“RSLT” indicates the result.

③ Select ALL when checking the condition for all channels.
During check, the condition in each channel is displayed for area ②.
After the check for all channels is completed, “GRN” is also displayed on the right of ALL if the condition for all channels is GRN. If there is at least one channel whose condition is YEL or RED, the worst condition is displayed on the right of ALL.

To execute the check

(1) Insert the alignment tape SR5-1 (for a 525/60 system) or SR5-1P (for a 625/50 system).

Notes

- The tape amount on the recorded portion that is played back after a cassette tape is inserted must exceed the check execution time.
  The check execution time for each channel is usually about ten seconds and about 80 seconds in an ALL check.

(2) Turn the JOG dial and move the ∗ mark to the channel to be checked or ALL.
- Usually, select ALL.

(3) Push the SET button.
- The tape is automatically played back in the PLAY mode. The check is then initiated.
- Message “Auto Tracking ...” or “Auto Checking ...” is displayed on the LCD monitor.
  During ALL check execution, the check result in the channel is displayed every time a one-channel check is completed.
  The sub LCD displays an ordinary time counter.
- To cancel the check, push the MENU button.

Notes

- Message “Insert SR5-1” is displayed on the LCD monitor when no cassette tape is inserted. The tape is automatically played back in the PLAY mode when a cassette tape is inserted. The check is then initiated.
- If message “Auto Check (Push SET)” is continuously displayed on the LCD monitor, the non-recorded portion on the tape is judged to be played back from the beginning. Change the playback position on the tape.
- Check cannot be properly performed in modes other than PLAY mode. Leave the check as it is until automatic check is completed. If modes other than PLAY mode are entered, the check cannot be performed any longer or the condition becomes “RED”.

(4) Confirm the check result on the LCD monitor.
- If no abnormality is found, “GRN” is displayed on the right of the selected channel or ALL.
- Refer to the “For Check Failure” on page 3-31 when message “Auto Check Failure” is displayed on the LCD monitor.
- Refer to the “For Condition NG” on page 3-30 when message “Condition NG” is displayed on the LCD monitor or when conditions other than “GRN” are displayed on the right of the checked channel.

Notes

- Refer to the “For Check Failure” on page 3-31 when the check result in all channels is “RED” even if message “Condition NG” is displayed on the LCD monitor during ALL check execution.
- “GRN”, “YEL”, or “RED” is displayed in a sub LCD. In only the sub LCD, it cannot be confirmed whether the condition is NG or check failure when it is “RED”.
  The check result for each channel is displayed when the JOG dial is turned after performing ALL check.

(5) Push the MENU button when terminating the menu.
To execute the check again in this menu, return to step (2).

Note

To change the playback tape, push the SET button while pressing the EJECT button. The tape is then ejected without influencing the check result. Insert another tape and push the PLAY button. The check is then initiated. This operation does not coincide with the message on the LCD monitor.

Example of display and operation

ALL is selected in C11 : PB CH CONDITION.

LCD monitor

```
C11:PB CH CONDITION

Auto Check (Push SET)

ch  RSLT    ch  RSLT
A1          B1
A2          B2
A3          B3
*ALL
```

Sub LCD

```
C11-ALL
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ Select
(3) ⇩ SET

```
C11:PB CH CONDITION

Auto Tracking ...

ch  RSLT    ch  RSLT
A1          B1
A2          B2
A3          B3
*ALL
```

⇩

```
C11:PB CH CONDITION

Auto Checking ...

ch  RSLT    ch  RSLT
A1          B1
A2          B2
A3          B3
*ALL
```

⇩

```
C11:PB CH CONDITION

Auto Check Complete

ch  RSLT    ch  RSLT
A1  GRN     B1
A2          B2
A3          B3
*ALL
```

⇩

```
C11:PB CH CONDITION

Auto Tracking ...

ch  RSLT    ch  RSLT
A1  GRN     B1
A2          B2
A3          B3
*ALL
```

⇩
(omitted)
⇩
(continue)

(continued)
⇩

```
C11:PB CH CONDITION

Auto Check Complete

ch  RSLT    ch  RSLT
A1  GRN     B1  GRN
A2  GRN     B2  GRN
A3  GRN     B3  GRN
*ALL GRN
```

Sub LCD

```
C11 -ALL GRN
```

(4) ⇩ Confirm
(5) ⇩ MENU

For Channel Condition NG

Confirm, recheck, and clean the drum (video heads) according to the procedures below.

(1) If a check is performed using alignment tapes other than SR5-1/SR5-1P, recheck using alignment tape SR5-1/SR5-1P.
If no abnormality is found, the check is completed.

Note

If no abnormality is found during check using an alignment tape, a trouble (tape is damaged or recording is not done properly) is considered to exist in the previously played back tape portion.

(2) Change the playback portion on the alignment tape, then recheck.
If no abnormality is found, the recheck is completed.

(3) Recheck using an alignment tape after performing the cleaning using a cleaning tape (in Section 4-3-1).
If no abnormality is found, the recheck is completed.

(4) Recheck using an alignment tape after performing the cleaning using a cleaning tape again (the amount of the tape used is 15 seconds).
If no abnormality is found, the recheck is completed.

(5) Recheck using an alignment tape after performing the cleaning with cleaning cloth (in Sections 4-3-2).
If no abnormality is found, the recheck is completed.

If the error condition is not improved in the way mentioned above, the possible cause below are considered.

- VTR’s servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A0 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- RF system adjustment defect
  ⇨ Readjust the RF system. (A1 : RF ADJUST)
- Worn PB head in the drum assembly
  ⇨ After confirming the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required.
  (Refer to the maintenance manual part 2, volume-1.)
- Adjustment defect in tape transport system or component part installation defect.
  ⇨ Readjust the tape transport system or reinstall the parts
  (Refer to the maintenance manual part 2, volume-1.)
- EQ-72 board defect
- Drum assembly defect

For Check Failure

Change the playback portion on the tape, then recheck.
If no check failure occurs again, a trouble is considered to exist in the previously played back portion.

Confirmation of cassette tape

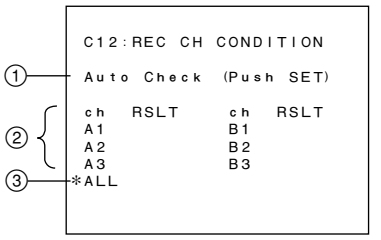
Check failure occurs if the no-recorded portion is played back or the recording format is not in Betacam SX.
Moreover, check failure will also occur on the tape recorded by the failled Betacam SX VTR. Confirm that the tape can be correctly played back by the other normal operating Betacam SX VTR.

If no trouble is found on the played back tape

The possible cause below are considered.

- Heads clogging
  ⇨ Perform steps (1) to (5) of “For Condition NG” on previous page.
- VTR’s servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A0 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Brush/slip ring assembly defect or its part installation/connection defect
  ⇨ Replace or reinstall the brush/slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between EQ-72 board and drum assembly) connection defect
- RF system adjustment defect
  ⇨ Readjust the RF system. (A1 : RF ADJUST)
- EQ-72 board defect
- Drum assembly defect

C12 : REC CH CONDITION



In this menu, the error condition for each channel is displayed in three steps (GRN, YEL, and RED) when the tape recorded based on a Betacam SX format is played back using the advance PB heads (A1, A2, B1, and B2) by tracking in the insert REC mode, and played back using the confidence PB heads (A3 and B3) in the crash REC mode.
C12 checks using the PB signal from the PB heads (A1, A2, A3, B1, B2, and B3) in the REC mode.

Notes

- Display the channel condition of the A3 and B3 heads in the CH CONDITION area on the sub LCD display when selecting the CONFIDENCE PB MODE to ON in the crash REC mode.
- During normal operation, the tape is played back by non-tracking. Therefore, the condition for each channel cannot be confirmed using a CH CONDITION indicator.
- If abnormality exists in the servo system of a VTR, each menu of C1 : RF CHECK does not function normally.

Description of LCD monitor

① The display in this line changes. Each display and its meaning are described below.
Auto Check (Push SET) : Push the SET button to start the check.
Insert Check Tape : Insert a tape for check.
Auto Tracking... : Tracking is in an optimization process.
Auto Checking... : Check is in progress.
Auto Check Complete : Check is completed.
Auto Check Failure : Check failure
Condition NG : Error condition defect

② Select using a ∗ mark when checking the condition for each channel.
After the check is completed, the condition (GRN, YEL, or RED) is displayed on the right of a channel name. “RED” is displayed even if the check fails.

Note

“RSLT” indicates the result.

③ Select ALL when checking the condition for all channels.
During check, the condition in each channel is displayed for area ②.
After the check for all channels is completed, “GRN” is also displayed on the right of ALL if the condition for all channels is GRN. If there is at least one channel whose condition is YEL or RED, the worst condition is displayed on the right of ALL.

To execute the check

(1) Insert the lignment tape SR5-1 (for a 525/60 system) or SR5-1P (for a 625/50 system).

Notes

- The tape amount on the recorded portion that is played back after a cassette tape is inserted must exceed the check execution time. Before check, record a data on blank tape for two minutes or more. The recorded data is rewritten to new data in this menu execution.
  The check execution time for each channel is usually about ten seconds and about 80 seconds in an ALL check.

(2) Turn the JOG dial and move the ∗ mark to the channel to be checked or ALL.
- Usually, select ALL.

(3) Push the SET button.
- The tape is automatically recorded back in the REC mode. The check is then initiated.
- Message “Auto Tracking ...” or “Auto Checking ...” is displayed on the LCD monitor.
  During ALL check execution, the check result in the channel is displayed every time a one-channel check is completed.
  The sub LCD displays an ordinary time counter.
- To cancel the check, push the MENU button.

Notes

- Message “Insert Check Tape” is displayed on the LCD monitor when no cassette tape is inserted. The tape is automatically played back in the PLAY mode when a cassette tape is inserted. The check is then initiated.
- If message “Auto Check (Push SET)” is continuously displayed on the LCD monitor, the non-recorded portion on the tape is judged to be recorded from the beginning. Change the record position on the tape.
- Check cannot be properly performed in modes other than REC mode. Leave the check as it is until automatic check is completed. If modes other than REC mode are entered, the check cannot be performed any longer or the condition becomes “RED”.

(4) Confirm the check result on the LCD monitor.
- If no abnormality is found, “GRN” is displayed on the right of the selected channel or ALL.
- Refer to the “For Check Failure” on page 3-37 when message “Auto Check Failure” is displayed on the LCD monitor.
- Refer to the “For Condition NG” on page 3-36 when message “Condition NG” is displayed on the LCD monitor or when conditions other than “GRN” are displayed on the right of the checked channel.

Notes

- Refer to the “For Check Failure” on page 3-37 when the check result in all channels is “RED” even if message “Condition NG” is displayed on the LCD monitor during ALL check execution.
- “GRN”, “YEL”, or “RED” is displayed in a sub LCD. In only the sub LCD, it cannot be confirmed whether the condition is NG or check failure when it is “RED”.
  The check result for each channel is displayed when the JOG dial is turned after performing ALL check.

(5) Push the MENU button when terminating the menu.
To execute the check again in this menu, return to step (2).

Note

To change the playback tape, push the SET button while pressing the EJECT button. The tape is then ejected without influencing the check result. Insert another tape and push the PLAY button. The check is then initiated. This operation does not coincide with the message on the LCD monitor.

Example of display and operation

ALL is selected in C12 : REC CH CONDITION.

LCD monitor

```
C12:REC CH CONDITION

Auto Check (Push SET)

ch  RSLT    ch  RSLT
A1          B1
A2          B2
A3          B3
*ALL
```

Sub LCD

```
C12-ALL
```

(1) ⇩ Insert SR5-1/SR5-1P
(2) ⇩ Select
(3) ⇩ [SET]

```
C12:REC CH CONDITION

Auto Tracking ...

ch  RSLT    ch  RSLT
A1          B1
A2          B2
A3          B3
*ALL
```

⇩

```
C12:REC CH CONDITION

Auto Checking ...

ch  RSLT    ch  RSLT
A1          B1
A2          B2
A3          B3
*ALL
```

⇩

```
C12:REC CH CONDITION

Auto Check Complete

ch  RSLT    ch  RSLT
A1  GRN     B1
A2          B2
A3          B3
*ALL
```

⇩

```
C12:REC CH CONDITION

Auto Tracking ...

ch  RSLT    ch  RSLT
A1  GRN     B1
A2          B2
A3          B3
*ALL
```

⇩
(omitted)
⇩
(continue)

(continued)
⇩

```
C12:REC CH CONDITION

Auto Check Complete

ch  RSLT    ch  RSLT
A1  GRN     B1  GRN
A2  GRN     B2  GRN
A3  GRN     B3  GRN
*ALL GRN
```

Sub LCD

```
C12-ALL GRN
```

(4) ⇩ Confirm
(5) ⇩ [MENU]

For Channel Condition NG

Confirm, recheck, and clean the drum (video heads) according to the procedures below.

(1) If no abnormality is found during PB CH CONDITION check but abnormality is found during REC CH CONDITION check, perform as follows.
- Readjust the recording current.
- Record a data again for two minutes or more.
- Perform the REC CH CONDITION check.

If no abnormality is found, recheck and readjustment are completed.

Note

The data is overwritten on a cassette tape in REC CH CONDITION check.
Before check, record a data on a blank tape for two minute or more.

(2) After that, perform the REC CH CONDITION check after recording a data again for two minutes or more. Perform the cleaning using a cleaning tape
(in Section 4-3-1).
If no abnormality is found, the recheck is completed.

(3) After that, perform the REC CH CONDITION check after recording a data again for two minutes or more. Perform the cleaning using a cleaning tape again (the amount of the tape used is 15 seconds).
If no abnormality is found, the recheck is completed.

(4) After that, perform the REC CH CONDITION check after recording a data again for two minutes or more. Perform the cleaning with cleaning cloth
(in Sections 4-3-2).
If no abnormality is found, the recheck is completed.

If the error condition is not improved in the way mentioned above, the possible cause below are considered.

- VTR’s servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A0 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Worn PB head in the drum assembly
  ⇨ After confirming the hours meter (H02 : DRUM RUNNING HOURS), replace the upper drum assembly as required.
  (Refer to the maintenance manual part 2, volume-1.)
- Adjustment defect in tape transport system or component part installation defect.
  ⇨ Readjust the tape transport system or reinstall the parts
  (Refer to the maintenance manual part 2, volume-1.)
- EQ-72 board defect
- Drum assembly defect

For Check Failure

Change the record portion on the tape, then recheck.
If no check failure occurs again, a trouble is considered to exist in the previously recorded portion.

Confirmation of cassette tape

Check failure occurs if the no-recorded portion is recorded or the recording format is not in Betacam SX. Moreover, check failure will also occur on the tape recorded by the failled Betacam SX VTR. Confirm that the tape recorded by this unit can be correctly played back.

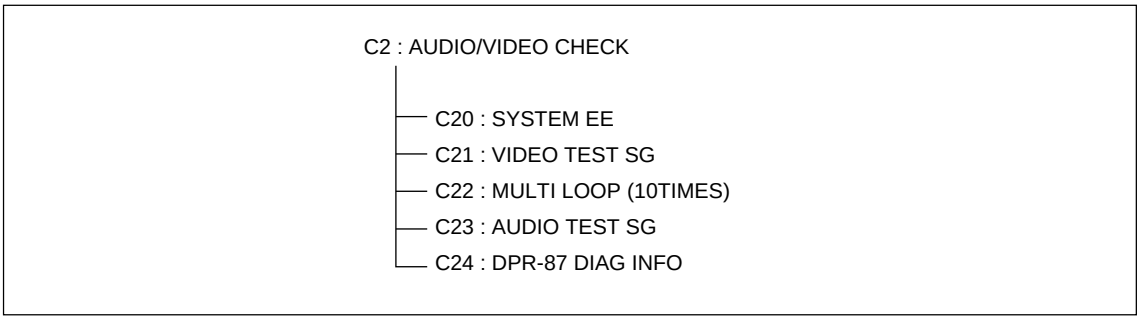
If no trouble is found on the played back tape

The possible cause below are considered.

- Heads clogging
  ⇨ Perform steps (1) to (5) of “For Condition NG” on previous page.
- VTR’s servo system adjustment defect or circuit defect
  ⇨ Readjust the servo system. (A0 : SERVO ADJUST)
  ⇨ Check the servo system. (C03 : REEL/CAPSTAN MOTOR & FG CHECK)
- Brush/slip ring assembly defect or its part installation/connection defect
  ⇨ Replace or reinstall the brush/slip ring assembly. (Refer to the maintenance manual part 2, volume-1.)
- Harness (between EQ-72 board and drum assembly) connection defect
- EQ-72 board defect
- Drum assembly defect

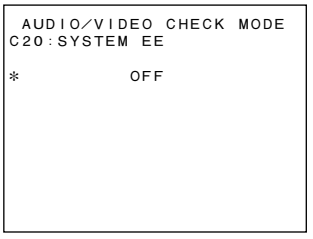
3-2-4. AUDIO/VIDEO CHECK Mode (C2)

The C2 : AUDIO/VIDEO CHECK mode has four menus that are useful for checking audio and video systems.



Menu Tree of Audio/Video Systems Check Mode

C20 : SYSTEM EE



This menu selects the system E-E function to be enabled or disable in the maintenance mode, and additionally selects a signal path from among the followings when the system E-E function is enabled.

OFF: Normal state (in which the system E-E state is not entered)
ECC-EE: Reflects the signal after it passes through IC35 (ECC encoder) on the DPR-87 board.
RF-EE: Reflects a signal in the EQ-72 board.

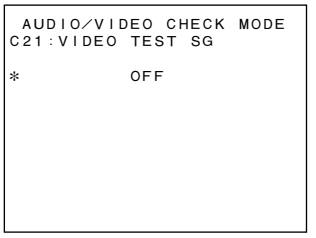
System E-E setting

To set the system E-E function, turn the JOG dial while pressing the search button and display the desired setting.
The specified setting is maintained until the maintenance mode is terminated or the setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- Be sure to perform under the next state when selecting the system E-E to enable:
  Eject a cassette tape

C21 : VIDEO TEST SG



This menu selects the operation in the maintenance mode of a video test signal generator incorporated into this unit.

OFF: The video test signal generator operation stops.
Except OFF: A video test signal generator outputs the selected signals (below).

100% color bars	75% color bars
75% reverse color bars	
Bowtie	Pulse and bar
Multi-burst	H sweep
5-step	Ramp
Shallow ramp	Red signal
50% flat	100% flat
Black burst	
Pathological check code	
NTC7 (NTSC) ⇦ Only for 525/60 system	
Line330 (625) ⇦ Only for 625/50 system	

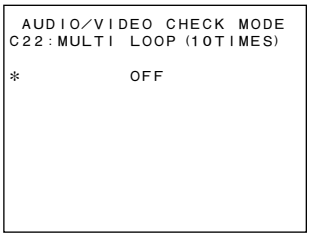
Setting of video test signal generator

To set the video test signal generator, turn the JOG dial while pressing the search button and display the desired setting.
This setting is valid until the maintenance mode is terminated. However, the C21 : VIDEO TEST SG setting is reset to OFF when the C22 : MULTI LOOP (10TIMES) setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal of a test signal generator can also be recorded on the tape. In this case, push the SET button and perform the recording operation with the white square is displayed in the upper-right position of the LCD monitor.

C22 : MULTI LOOP (10TIMES)



This menu selects the multi-loop function enabled or disabled in the maintenance mode, and additionally selects a video test signal when the multi-loop function is enabled.
The video test signal that can be selected is output from an internal video test signal generator. The video test signal is the same in type as one described in a C21 : VIDEO TEST SG menu.

OFF: Normal state (in which no multi-loop operation is performed)
Except OFF: The selected signal is output from a video test signal generator for multi-loop operation.

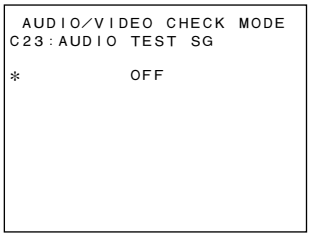
Multi-loop function setting

To set the multi-loop function, turn the JOG dial while pressing the search button and display the desired setting.
This setting is valid until the maintenance mode is terminated. However, the C22 : MULTI LOOP (10TIMES) setting is reset to OFF when the C21 : VIDEO TEST SG setting is changed.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal during multi-loop operation can also be recorded on the tape or hard disk. In this case, push the SET button and perform the recording operation with the white square is displayed in the upper-right position of the LCD monitor.

C23 : AUDIO TEST SG



This menu selects the operation in the maintenance mode of an audio test signal generator incorporated in this unit.

OFF: The audio test signal generator operation stops.
Except OFF: An audio test signal generator outputs the selected signals (below).
Silence
1 kHz sine 0 VU
1 kHz sine burst/1 field
1 kHz sine burst/2 field
1 kHz sine burst/5 field
1 kHz sine burst/8 field
1 kHz sine burst(10)
1 kHz sine burst(40)
Saw wave

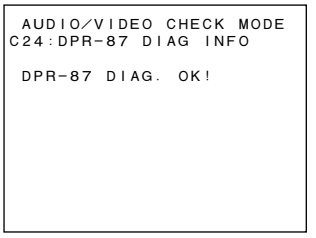
Setting of audio test signal generator

To set the audio test signal generator, turn the JOG dial while pressing the seach button and display the desired setting.
This setting is valid until the maintenance mode is terminated.

Notes

- This menu is set to OFF when the maintenance mode is activated.
- The output signal of a test signal generator can also be recorded on the tape. In this case, push the SET button and perform the recording operation with the white square is displayed in the upper-right position of the LCD monitor.

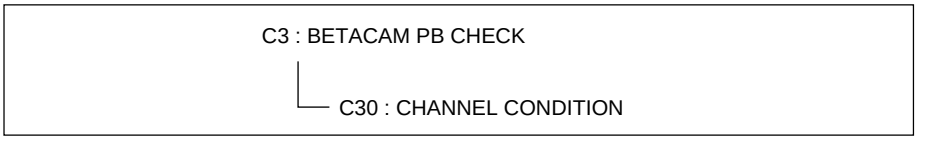
C24 : DPR-87 DIAG INFO



Displays the result of self diagnostic in DPR-87 board.
(For more details, refer to maintenance manual part 2 volume 1.)

3-2-5. BETACAM PB CHECK Mode (C3)

The C3 : BETACAM PB CHECK mode is used to check the playback RF system based on a Betacam/Betacam SP format.
In this unit, one menu is available.



Menu Tree of BETACAM PB Check Mode

Note

Betacam/Betacam SP PB function of DNW-A220 is for NTSC (525/60) system.
Betacam/Betacam SP PB function of DNW-A220P is for PAL (625/50) system.
But the PB picture of the other video system is easily played back by selecting the setup menu.

C30 : CHANNEL CONDITION

This menu displays the RF level condition of video channels (Y and C) in three steps (GRN, YEL, and RED) when the tape recorded based on a Betacam/Betacam SP format is played back in the PLAY mode.

Note

If abnormality exists in the servo system of a VTR, the C30 : CHANNEL CONDITION menu does not function normally.

To execute the check

(1) Push the SET button.
- A white square is displayed in the upper-right position of the LCD monitor. The sub LCD displays an ordinary time counter.
- To cancel the check, push the MENU button.

(2) Insert the alignment tape CR5-1B (for a 525/60 system) or CR5-1B PS (for a 625/50 system).

(3) Push the PLAY button. (Playing back the tape in the PLAY mode.)
- ">>>" is displayed on the LCD monitor.

Note

No check can be performed in modes other than PLAY. ">>>" is not displayed even if the portion recorded based on formats other than Betacam/Betacam SP or the non-recorded portion is played back in the PLAY mode.

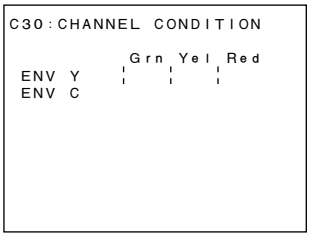
(4) Confirm that ">>>" is displayed in the "GRN" column of Y and C channels.
- If ">>>" is displayed in columns other than "GRN", refer to the "For Condition NG" on the next page.

To terminate the check

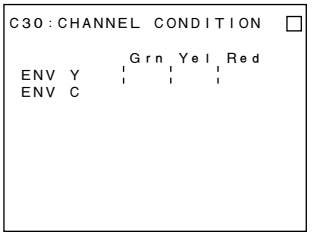
(5) Stop the tape playback operation and eject the cassette.

(6) Push the MENU button.
- The square displayed in the upper-right position of the LCD monitor disappears.
  The sub LCD displays the former "C30-CHANNEL COND".

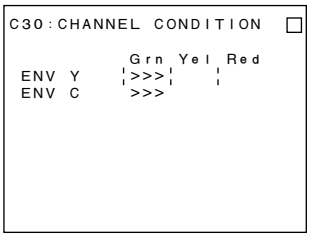
Example of display and operation



(1) ⇩ SET



(2) ⇩ Insert a recorded tape
(3) ⇩ PLAY



(4) ⇩ Confirm
(5) ⇩ STOP
⇩ EJECT
(6) ⇩ MENU

For Condition NG

Confirm, recheck, and perform the drum (video heads) cleaning according to the procedures below.

(1) Change the tape playback portion, then recheck.
If no abnormality is found, the recheck is completed.
(2) Perform the cleaning using a cleaning tape (in Section 4-3-1) (the amount of the tape used is five seconds), then recheck.
If no abnormality is found, the recheck is completed.
(3) Perform the cleaning using a cleaning tape again (the amount of the tape used is 15 seconds), then recheck.
If no abnormality is found, the recheck is completed.
(4) Perform the cleaning with cleaning cloth (in Sections 4-3-2), then recheck.
If no abnormality is found, the recheck is completed.
If the condition described above is not improved, the abnormality below is considered to have occurred.

Abnormality on PB tape

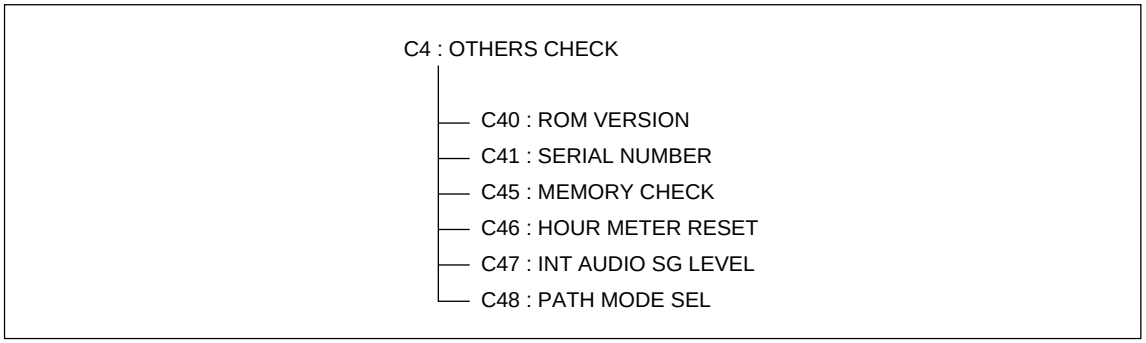
- The tape is damaged.
- The tape cannot be recorded properly.

Abnormality in this unit

- Adjustment defect of Betacam PB system (DM-114 board)
  ⇨ Readjust the Betacam PB system. (A3 : BETACAM PB ADJUST)
  (Refer to the maintenance manual part 2, volume-1.)
- Adjustment defect in tape transport system or component part installation defect.
  ⇨ Readjust the tape transport system or reinstall the parts.
  (Refer to the maintenance manual part 2, volume-1.)
- Worn PB head
  ⇨ After confirming the hours meter (H2 : DRUM RUNNING HOURS), replace the upper drum assembly as required.
  (Refer to the maintenance manual part 2, volume-1.)
- Drum assembly defect
- EQ-72 board defect

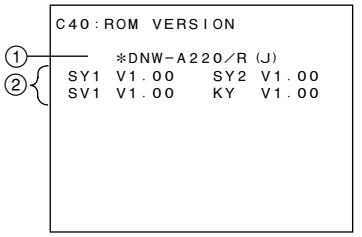
3-2-6. OTHERS CHECK Mode (C4)

The C4 : OTHERS CHECK mode has seven menus.



Menu Tree of OTHERS Check Mode

C40 : ROM VERSION



Note
The display on the left is one of the displayed examples.

This menu displays the model name of this unit, the destination, the ROM version, and the information of the installed option.

Description of LCD monitor

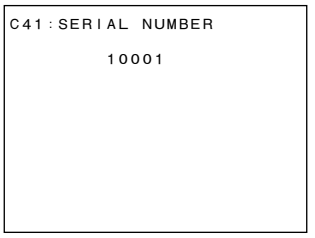
① The model name of this unit and the destination in parentheses are displayed on the LCD monitor. The model name and destination are detected from the setting condition of the DIP switch (S202) on the SY-259 board.

② Each version number of system control ROMs (SY1 and SY2), a VTR servo ROM (SV1), and an control panel board control ROM (KY) is displayed on the LCD monitor.

Menu operation

Turn the JOG dial to move the ＊ mark.
The contents of a ＊-marked item on the LCD monitor are displayed in a sub LCD.

C41 : SERIAL NUMBER



This menu displays the serial number of this unit. When each serial number does not coincide because of repair, it can be set again in this menu.

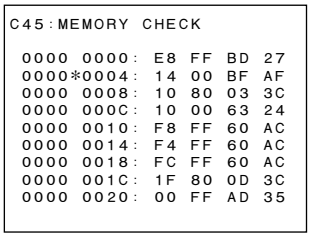
Notes

- Set the serial number again after the SY-259 board or the NV-RAM (IC112 on the SY-259 board) is replaced.
- "– – – – –" is displayed in the state where no serial number is set.

Serial number setting

(1) Turn the JOG dial to turn on and off the digit you wish to set.
(2) Turn the JOG dial while pressing the search button and change the digit number.
  - Message "Push SET Button" is displayed on only the LCD monitor when the serial number is changed.
  - To cancel the setting, push the MENU button to terminate this menu.
(3) Repeat steps (1) and (2) for each digit.
(4) Push the SET button to save the set serial number.
  - Message "Saving..." is displayed on only the LCD monitor. If no abnormality is found, the display changes to "Save Complete" after a few seconds.

C45 : MEMORY CHECK

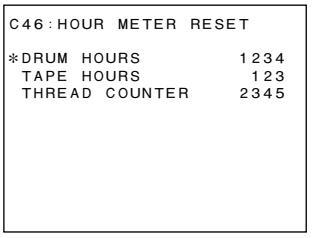


This menu displays the ROM data installed in this unit in hexadecimal.

Note

This menu is used for inspection at the factory.
For more details, refer to maintenance manual part 2 volume 1.

C46 : HOUR METER RESET



This menu can display and reset the values of the resettable hours meter and thread counter.

Description of LCD monitor

DRUM HOURS: Indicates the total of drum rotation time. Same as in setup menu ITEM-H12.
TAPE HOURS: Indicates the total of tape transport time. Same as in setup menu ITEM-H13.
THREAD COUNTERS: Indicates the total of threading count. Same as in setup menu ITEM-H14.

Menu operation

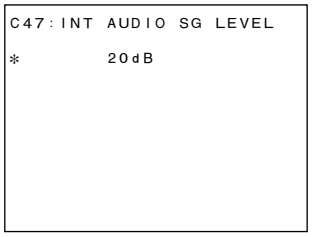
Turn the JOG dial to move the ∗ mark.
The contents of the ∗-marked line on the LCD monitor are displayed in a sub LCD.

To reset

The former state cannot be returned when the SET button is pushed for reset operation.

(1) Turn the JOG dial and move the ∗ mark to the item to be reset.
(2) Turn the JOG dial in REVERSE (↺) direction while pressing the search button. = The display value then becomes zero (“0”).
    - Message “Push SET Button” is displayed on only the LCD monitor when the display value is set to “0”.
    - To return to the former state, turn the JOG dial in FORWARD (↻) direction.
(3) If there are other items to be reset, repeat steps (1) and (2).
(4) Push the SET button to save the reset data.
    - Message “Saving ...” is displayed on only the LCD monitor. If no abnormality is found, the display changes to “Save Complete” after a few seconds.
      To turn off “Save Complete”, turn the JOG dial.

C47 : INT AUDIO SG LEVEL



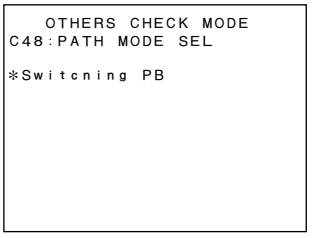
This menu can change the output level of an internal audio SG.
The SG level can be selected from among the following. (The factor setting is 20 dB.)
20 dB, 18 dB, 16 dB

SG level setting

(1) Turn the JOG dial while pressing the search button, and the desired setting is then displayed.
- Message “Push SET Button” is displayed on only the LCD monitor when the setting is changed.
- To cancel the setting, push the MENU button to terminate this menu.

(2) Push the SET button to save the changed setting.
- Message “Saving...” is displayed on only the LCD monitor. If no abnormality is found, the display changes to “Save Complete” after a few seconds.
  To turn off “Save Complete”, turn the JOG dial.

C48 : PATH MODE SEL



This menu sets the PB mode for confirming and adjusting video tracking. Switching PB and full PB modes are available for setting.
A PB signal is output to the test point (TP101) on the SV-194 board by the REC head when the tape is played back with this menu opened. (The signal output from this test point becomes an envelope waveform.)
In the switching PB mode, only the data area (helical track) based on an SX format is played back.
In the full PB mode, the overlap portion before and behind the data area based on an SX format is played back.
The switching PB mode is always set when the menu is opened.

PB mode setting

To set the PB mode, turn the JOG dial while pressing the search button and display the desired setting.

Menu operation

A white square is displayed in the upper-right position of the LCD monitor when the SET button is pushed after the switching PB and full PB modes are set. The unit then enters the ordinary operation state (in which the ordinary operation of this unit except a menu system can be performed.)
In this state, play back the specified alignment tape, and confirm and adjust the video tracking.
However, character information (time code or operation status) superimposed during ordinary operation is not displayed.
To return to the former state, push the MENU button.

Note

For the video tracking confirmation and adjustment, refer to “4-5. Video Tracking Confirmation and Adjustment” in the maintenance manual part 2, volume-1.

3-3. Error Logger Display Mode (M2)

3-3-1. Outline

This unit has an error log function that records the error generated or detected in this unit.
The error logger display mode is used to superimpose the contents (data) of the error log on the LCD monitor and video monitor. The ordinary display mode (refer to Section 3-3-2) and the setting mode (refer to Section 3-3-3) that displays the menu to limit the error log display are available in this unit.
The calendar/clock date incorporated into this unit can be set in the setting mode.

Activation and Termination

The two methods below are used to activate the error logger display mode. To terminate the error logger display mode, push the MENU button in the display mode. It returns to the operation state before activation when the error logger display mode is terminated.

A. Select an M2 : ERROR LOGGER menu in the maintenance mode.
B. Push the MENU button while pressing the ENTRY button on the lower control panel during ordinary operation.

Error Log

The recorded error log is classified into three categories: TAPE ERROR, WARNING, and CONDITION. (The error log belongs to the three types.)
Each log is constituted by a message, error generation date, and time code.
The message varies depending on the type of a log.
The error generation date is the date based on the calendar and clock of this unit. (The year is omitted.)
The time code records the time code data of the VTR side which is stored in this unit at the error occurs.
The maximum number of stored log is 100. If the number of log exceeds 100, the contents of oldest error log is erased sequentially.

TAPE ERROR

An error code and error message are recorded as a message when the error (error codes 01 to 99) related to a VTR and system occurs.
When multiple sub-error messages are displayed, the three sub-error messages from the top are recorded.
For the error message, refer to Section 2.

WARNING

The warning log below is recorded in an error log.

- REFERENCE MISSING
  This message is recorded when no signal is input to the REF VIDEO (reference video signal) connector after the power is turned on. But, this message is not recorded in the error log when the setting of 105 : REF SYSTEM ALARM in a setup menu to OFF.

CONDITION

The condition logs below are recorded in an error log.

- VIDEO PB CONDITION RED
  This message is recorded when the channel condition becomes red during video PB operation.
- AUDIO PB CONDITION RED
  This message is recorded when the channel condition becomes red during audio PB operation.

3-3-2. Display Mode

The operation in the ordinary display mode is described based on a display example on the LCD monitor.
The log number/total log count is displayed in the second line. "(001/000)" is displayed when no log exists.
The third to tenth lines (eight lines) are the area where logs are displayed. The three-digit number on the left indicates the log number. The contents of a log are displayed on its right.
A calendar/clock is displayed on the lowest line.

Notes

- The top screen on the right is the example displayed when the error logger mode is first activated after the power is turned on. The second-time or later screen is displayed with the preceding display completed.
- In a sub LCD, only the log number/total log count (e.g., "ERR LOG 001/03") is displayed.

JOG dial (JOG mode)

To display the log number not displayed on the screen, turn the JOG dial and move the ∗ mark.

CTL/TC/U-BIT button

On this screen, the whole message is displayed partially. To display other information (date and time code), push the CTL/TC/U-BIT button.

F FWD button

The whole contents of a log to which the ∗ mark was set are displayed while the F FWD button is pressed.
The category (error code for TAPE ERROR and DISK ERROR) of an error log is displayed in the third line. Messages are displayed in the fourth and fifth line
s, and sub-error messages in the sixth to eighth lines. The date (not including the year) is displayed in the ninth line, and time code in the tenth line.
Other logs can be displayed in this display state when the JOG dial is turned with the F FWD button pressed.

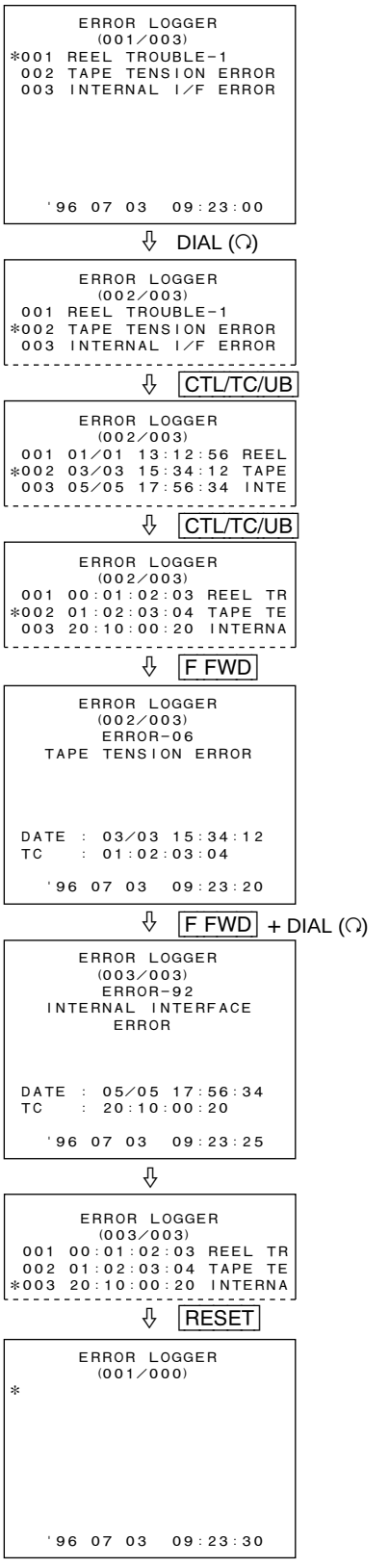
RESET button

The recorded all logs are erased when the RESET button is pushed.

Note

Usually, do not erase any log.
There may be some error logs that are useful for confirmation of the progress when a trouble occurs or that are important in preventing a trouble from occurrence.

Example of display and operation



SET button

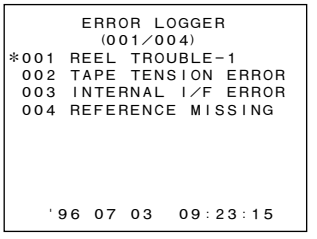
A white square mark is displayed in the upper-right position of the LCD monitor when the SET button is pushed. The unit then enters the normal operation state (in which the normal operation of this unit except a menu system can be performed). However, the character information (time code or operation status) superimposed during normal operation is not displayed in this case.
To return to the former state, push the MENU button.

MENU button

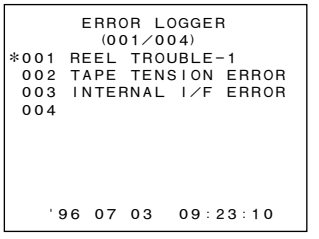
The display returns to the error logger display mode when the MENU button is pushed with the white square displayed in the upper-right position of the LCD monitor.
Pushing the MENU button in the error logger display mode terminates the error logger display mode.

Limited-display screen

For the error log of a category that is set to OFF in the menu of setting mode (refer to Section 3-3-3), information items other than a log number are not displayed. However, the whole display using the F FWD button is not influenced by the setting.

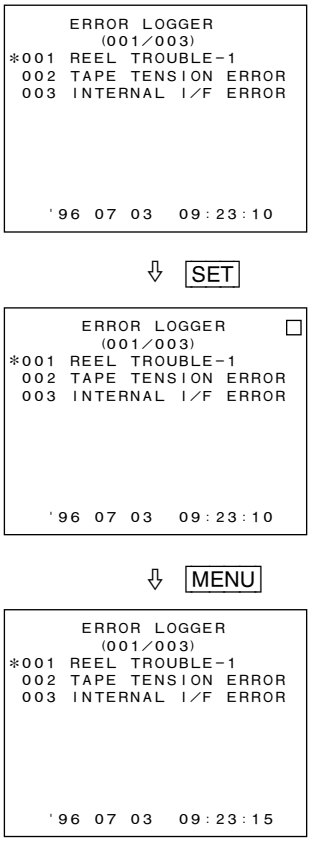


Ordinary Screen (No limited-display)



Only Warning Turned Off

Example of display and operation



3-3-3. Setting Mode

The setting mode is used to display a menu that limits the display of an error log. In this menu, the display can be turned on and off for each error log category.
A calendar/clock can also be set in this menu.

Notes

- The top and second screens on the right are the examples displayed when the error logger mode and setting mode are first activated after the power is turned on. The second-time or later screen is displayed with the preceding display completed.
- A white square mark is displayed in the upper-right position of the LCD monitor as in the display mode when the SET button is pushed in the setting mode (except when "Push SET Button" is displayed during calendar/clock setting). The unit then enters the normal operation state (in which the normal operation of this unit except a menu system can be performed). The former state is returned when the MENU button is pushed.

Entering the setting mode

Push the SET button while pressing the STOP button in the display mode.

Returning to the display mode

Push the SET button again while pressing the STOP button or push the MENU button.

Setting menu

The seventh to tenth lines on the LCD monitor are a setting menu. The display in the display mode is left in the first to fifth lines.
Each setting when the power is turned on is all ON.
The error log belonging to a category is limited in display when each item is set to OFF. (Refer to the "Limited-display screen" on the previous page.)
The changed setting is valid until the power is turned off. How to change the setting is described below.

(1) Turn the JOG dial and move the ∗ mark to the category to be changed in setting.

Notes

- In a sub LCD, the contents of the ∗-marked line are displayed on the LCD monitor.
- Turn the JOG dial continuously in FORWARD (↻) direction for the calendar/clock setting. (Refer to the next page.)

(2) To change the setting from ON to OFF, turn the JOG dial in REVERSE (↺) direction while pressing the search button.
To change it from OFF to ON, turn the JOG dial in FORWARD (↻) direction while pressing the search button.

(3) To change the setting of other categories, repeat steps (1) and (2).

(4) Push the MENU button to terminate the setting mode.

Example of display and operation

Display mode

```
      ERROR LOGGER
        (001/003)
*001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR




   '96 07 03  09:23:15
```

⇩ STOP + SET

Setting mode

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
*TAPE ERROR          ON
 WARNING             ON
 CONDITION           ON

   '96 07 03  09:23:17
```

⇩ DIAL(↻)

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
 TAPE ERROR          ON
*WARNING             ON
 CONDITION           ON

   '96 07 03  09:23:20
```

⇩ Search + DIAL(↻)

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
 TAPE ERROR          ON
*WARNING             OFF
 CONDITION           ON

   '96 07 03  09:23:22
```

⇩ Search + DIAL(↻)

```
      ERROR LOGGER
        (001/003)
 001 REEL TROUBLE-1
 002 TAPE TENSION ERROR
 003 INTERNAL I/F ERROR
------------------------
 TAPE ERROR          ON
*WARNING             ON
 CONDITION           ON

   '96 07 03  09:23:24
```

Calendar/clock setting

The calendar/clock's date and time of this unit can be adjusted in the setting mode as described below.
In a display/operation example on the right, 9:23 of July 3rd in 1996 is set to 15:00 of August 1st in 1996.

(1) Turn the JOG dial slowly and turn on and off the numerical value (year, month, day, hour, minute, or second) of the calendar/clock item to be changed.

Notes

- When a ∗ mark is displayed in the setting menu, turn the JOG dial continuously in FORWARD (↻) direction until the numerical value blinks. For the calendar/clock setting, a ∗ mark is not displayed on the LCD monitor.
- Do not turn the JOG dial excessively in REVERSE (↺) direction during setting. An ∗ mark is displayed in the setting menu and the calendar/clock setting is stopped.

(2) Turn the JOG dial while pressing the search button and change the numerical value to the desired one.

Notes

- The count display of seconds stops when the numerical value is changed. The internal data is updated.
- On the LCD monitor, message "Push SET Button" is displayed in the upper line.

(3) Repeat steps (1) and (2) until the numerical values in other items are changed completely.

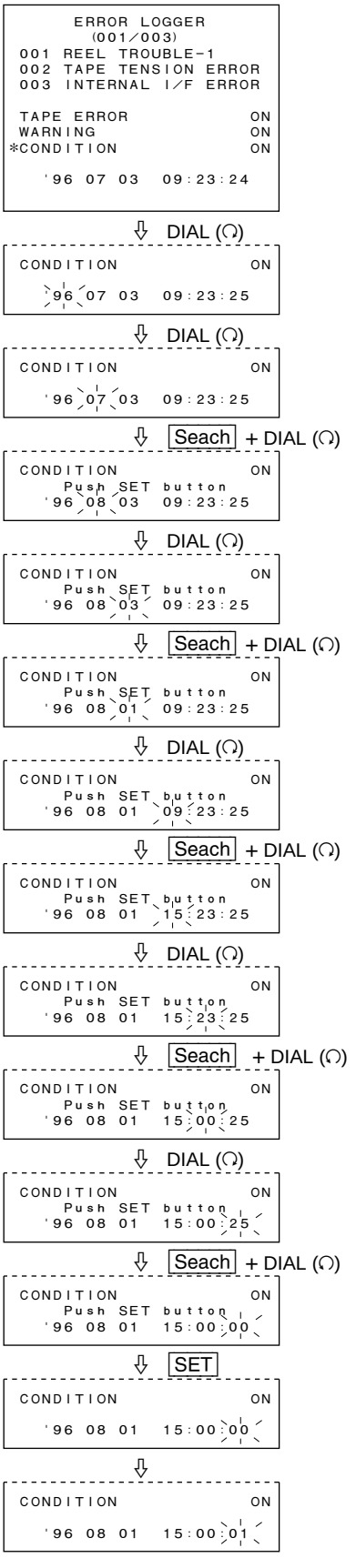
(4) Push the SET button to save the setting values.

Notes

- To change only the date, the time must also be set again.
- To cancel the calendar/clock setting, terminate the setting mode or turn the JOG dial in REVERSE (↺) direction until a ∗ mark is displayed in the setting menu (the setting menu item is displayed for a sub LCD).
- The unit enters the normal operation state when the SET button is pushed with message "Push SET Button" not displayed on the LCD monitor. Push the MENU button to return to the former state.
- To set the time accurately, push the SET button immediately the display and current time coincided.

(5) Push the MENU button to terminate the setting mode.

Example of display and operation



Section 4
Periodic Maintenance and Inspection

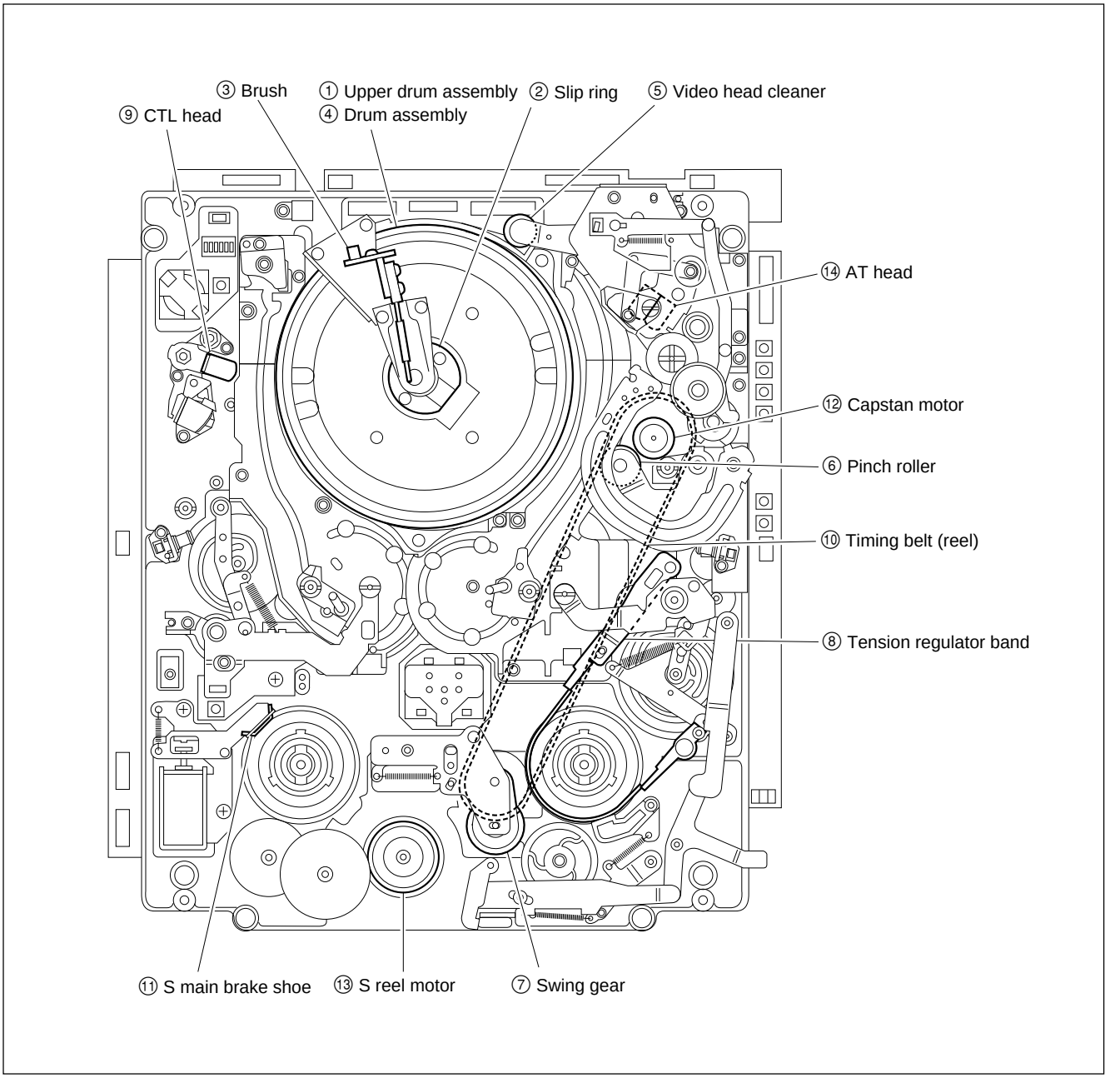
This section explains about periodic maintenance and how to clean.

4-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

4-1-1. Index

It is necessary to check and replace periodically to the following parts.
The numbers in the illustration correspond to the table in the next page.



4-1-2. Periodic Replacement and Check Item Table

The replacement time shown in the following table is not the guarantee term of parts. The replacement time of parts varies depending on the operating environment and conditions of the unit.
Especially, the pinch roller and video head cleaner may be required replacing earlier than replacement period shown in table depending on their dirt or abrasion.
The part with arrow "↓" in the table is included in the part pointed by the arrow.
When the part pointed by the arrow is to be replaced, the part with the arrow will be replaced at the same time.

R : Replacement

No.	Replacement Part	Mode	Inspection hours 1,000	2,000	3,000	4,000	5,000	6,000	Part No.	Description
1.	Upper drum assembly	A		R		↓		R	A-8317-461-A	Upper drum assembly DJR-20A-R
2.	Slip ring	A		R		↓		R	A-8317-463-A	Slip ring assembly, 4ch (RP)
3.	Brush	A		R		↓		R	A-8317-464-A	Brush assembly, 4ch (RP)
4.	Drum	A				R			A-8317-459-A	Drum assembly DJH-20A-R
5.	Video head cleaner	B	R	R	R	R	R	R	X-3167-281-3	VH cleaning roller assembly
									3-182-765-02	CR spacer
6.	Pinch roller	B	R	R	R	R	R	R	X-3678-926-1	Pinch Roller
7.	Swing gear	B		R		R		R	X-3679-512-1	Gear assembly
8.	Tension regulator band	B		R		R		R	A-8278-704-C	Tension regulator band assembly
9.	CTL head	B			R			R	8-825-779-72	CTL head PS244-21D
10.	Timing belt (reel)	B			R			R	3-611-544-01	Timing belt
11.	S main brake shoe	B			R			R	3-611-473-01	Brake shoe
12.	Capstan motor	B						R	8-835-590-01	DC motor SCV-0703A/J-N
13.	S reel motor	B						R	8-835-589-01	DC motor SRV11A/J-N
14.	AT head	B						R	8-825-920-02	Audio head EPS244-2103J

Mode A : Drum rotating hours (hours)
Mode B : Tape running hours (hours)

4-1-3. Hours Meter

This unit can display an hours meter on the LCD monitor. Perform a periodic check with this hours meter as a reference.

1. Contents of display

Menu No.	Display	Contents
H01	OPERATION HOURS	Sum of energized time
H02	DRUM RUNNING HOURS	Sum of drum rotating time
H03	TAPE RUNNING HOURS	Sum of tape running time
H04	THREADING COUNTER	Sum of threading
H12	DRUM RUNNING HOURS	Sum of drum rotating time (Resettable)
H13	TAPE RUNNING HOURS	Sum of tape running time (Resettable)
H14	THREADING COUNTER	Sum of threading (Resettable)

2. Display procedures

(1) Press the MENU button of the control panel to display the menus and their contents.
(2) Press the MENU button again to exit the MENU.

3. How to reset

Refer to “Section 3 Maintenance Mode” to reset the resettable menus (H12, H13, H14).

4-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

4-2-1. Using Cleaning Tape

If the video heads are clogged, clean the video head by the following procedure.
Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-5CLN

Procedure

1. Press the EJECT button.
   Then the cassette compartment is opened.
2. Insert the Cleaning tape BCT-5CLN to the unit.
3. Push the control panel down to close the control panel.
4. Press the EJECT and PLAY buttons simultaneously.
   The cleaning tape is played back for approx. 5 seconds. After that, the cleaning tape will be ejected automatically.
   Notes
   - If the cleaning tape is not ejected after playing back more than 5 seconds, be sure to press the EJECT button immediately and eject the cleaning tape.
   - Do not be place the cleaning tape in the STOP mode, and do not put the unit in fast-forward and rewind mode, because the video heads may be damaged.
5. Confirm that the head clogging is clear.

If the video heads are still clogged after cleaning by cleaning tape, clean them by cleaning cloth. (Refer to Section 4-2-3.)

4-2-2. General Information for the Use of Cleaning Cloth

1. Cautions

- Be sure turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not touch the greased portions during cleaning. If grease attaches to cleaning cloth, replace the cleaning cloth with a new one. If a cleaning cloth smeared with grease is used, grease may attach to the places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

2. Preparation

(1) Turn the power off.
(2) Remove the upper frame. (Refer to Section 1-6-2.)
(3) Remove the cassette compartment. (Refer to Section 1-7.)

4-2-3. Cleaning of Video Heads and Tape Running Surface of Upper Drum

Caution

Never touch the rotaing drum.
The video heads are the part that can be damaged easily. Be careful not to damage the video heads during cleaning.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Note

Do not use a cotton swab to clean the video heads.

Procedures

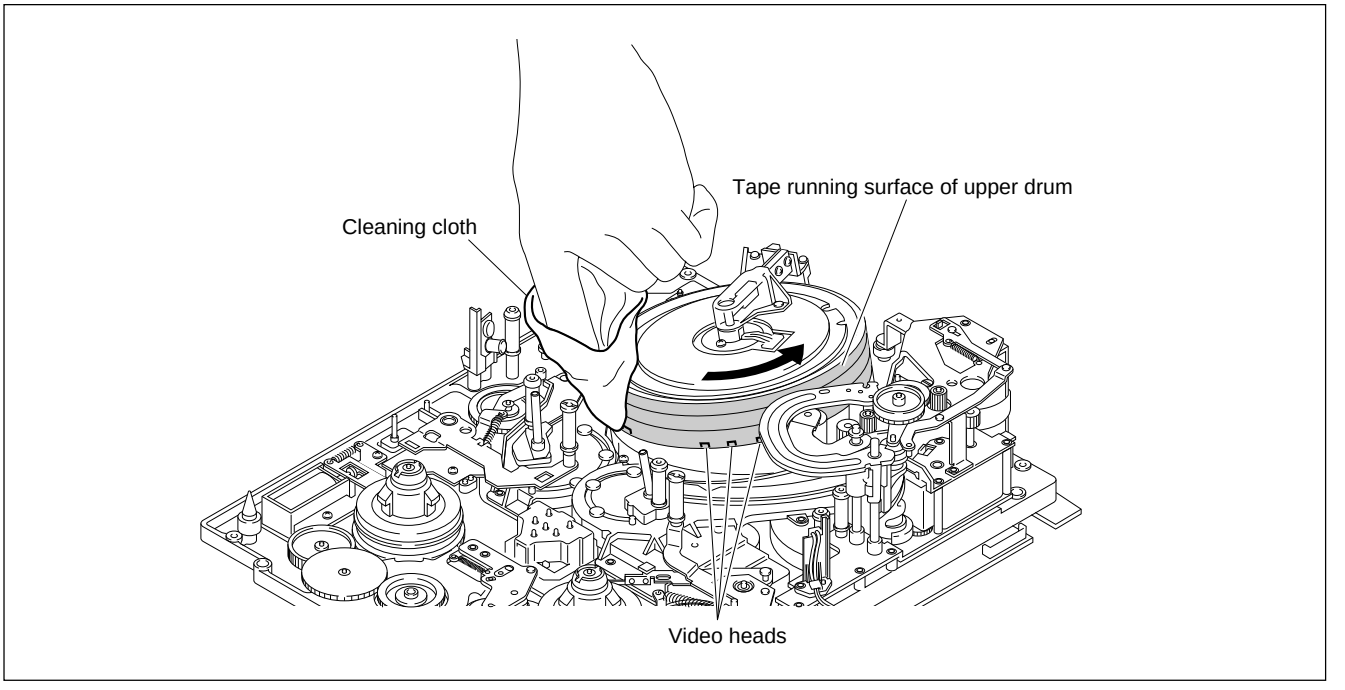
1. Hold the cleaning cloth moistened with a cleaning fluid keeping it without becoming wrinkled. And press the cleaning cloth slightly against the video heads.

2. Rotate the upper drum slowly counterclockwise two or three turns and clean the tape running surface and video heads with the cleaning cloth moistened with cleaning fluid.

   Note

   Be sure to rotate the upper drum counterclockwise and clean the video heads along the circumference. Do not rotate the upper drum in the opposite direction (clockwise) or clean it in the vertical direction. This may damage the brush and slip ring or the video heads.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Cleaning of Video Heads and Tape Running Surface of Upper Drum

4-2-4. Cleaning of Lead Surface and Tape Running Surface of Lower Drum

Caution

Be careful not to damage the lower drum (specially lead surface) during cleaning. Pay careful attention when cleaning the upper edge portion of the lower drum because it is located near the video heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (Never use a metallic skewer.)

Procedures

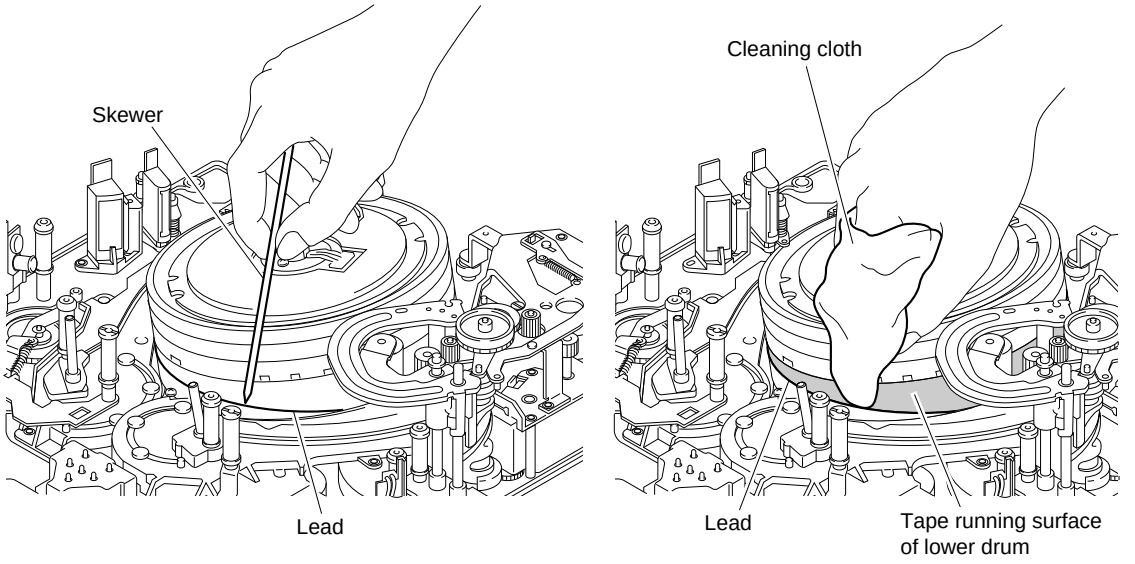
1. As shown in the figure, put a skewer (or an equivalent) along the drum lead surface and remove the magnetic powder.

   Notes

   1. Never use a metallic skewer instead of the skewer. This may damage the tape running surface.
   2. Tracking may be badly influenced when magnetic powder attaches to the drum lead surface. Remove the magnetic powder completely during cleaning.

2. Clean the drum lead surface and lower drum's tape running surface (shaded portion in the figure) with a cleaning cloth moistened with a cleaning fluid.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Cleaning of Lead Surface and Tape Running Surface of Lower Drum

4-2-5. Stationary Heads and Tape Cleaner Cleaning

Warning

The tape cleaner has sharp edge. Do not touch the edge with bare hands. Pay careful attention when cleaning the tape cleaner.

Caution

- Be careful not to damage the head surface when cleaning the stationary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

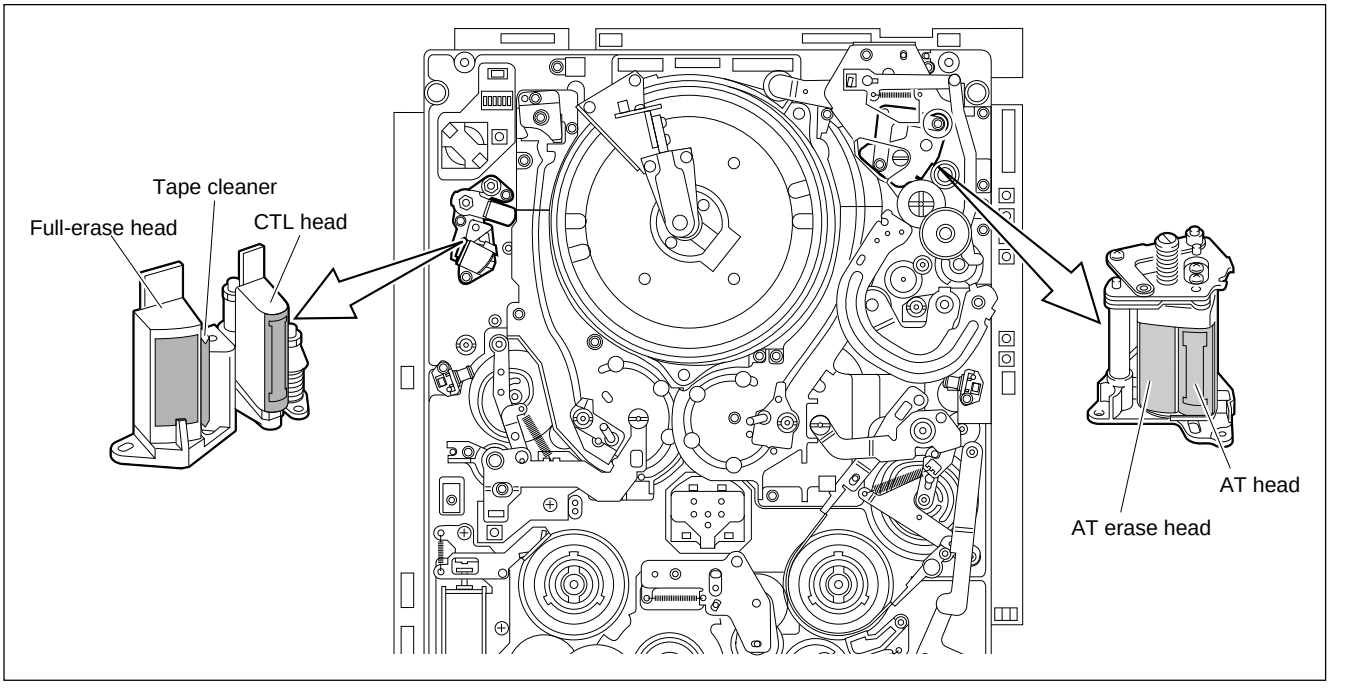
Procedures

1. Clean the tape running surfaces of the full-erase head, tape cleaner, CTL head, AT erase head and AT head in the vertical direction with a cleaning cloth moistened with a cleaning fluid.

   Notes

   - An error may occur in the playback or recording when magnetic powder attaches to the head gap portion of the full-erase head, CTL head, AT erase head or AT head. Remove the magnetic powder completely during cleaning.
   - Do not touch the edge portion of the tape cleaner with bare hands.
   - Pay careful not to damage the tape cleaner.

2. After cleaning, wipe them with a dry cleaning cloth two or three times.



Stationary Heads and Tape Cleaner Cleaning

4-2-6. Tape Running System Cleaning

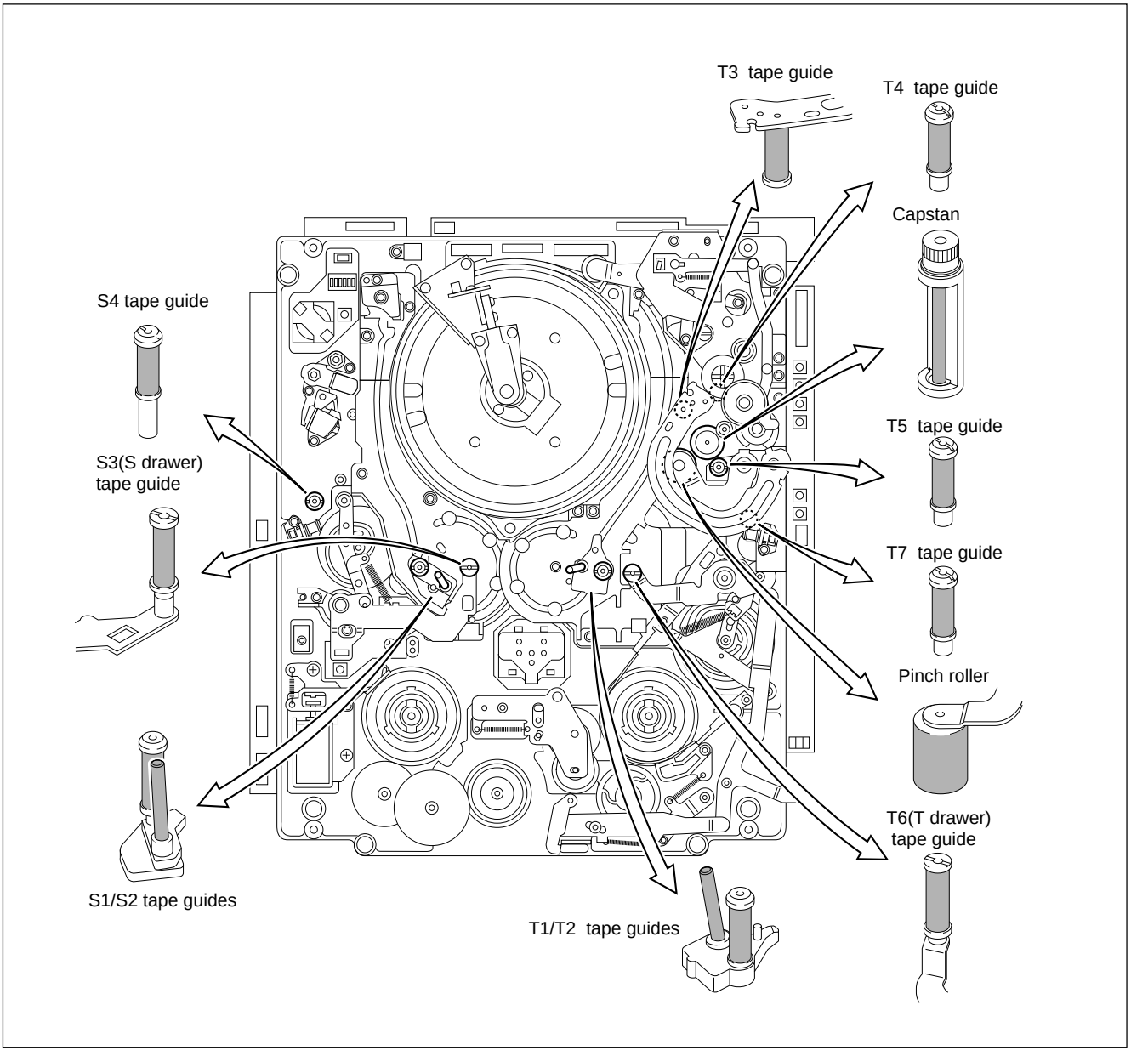
Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedures

1. Clean the tape running surfaces (shaded portions in the figure) of each guide with cleaning cloth moistened with a cleaning fluid.

2. After cleaning, clean them with a dry cleaning cloth two or three times.



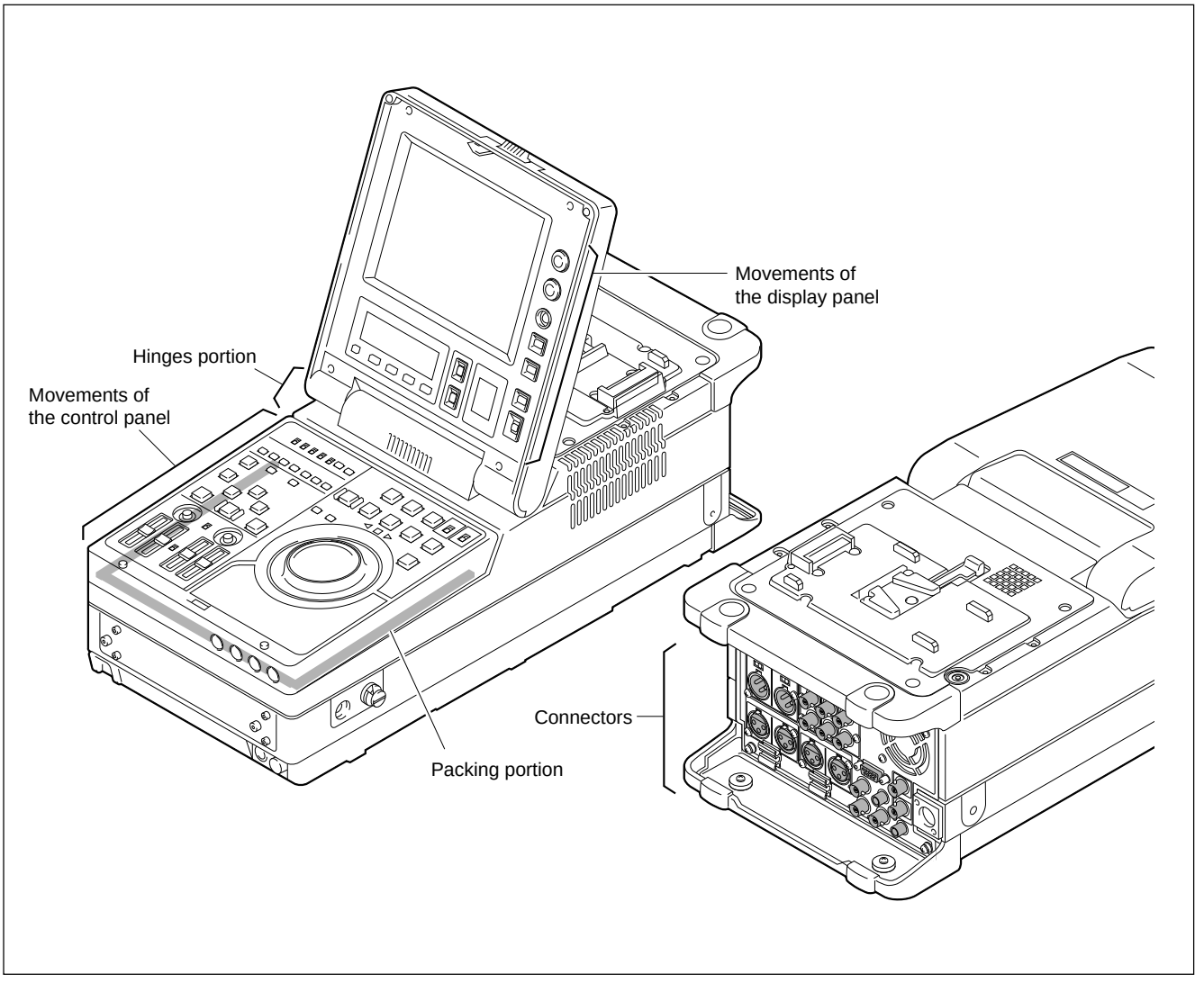
Tape Running System Cleaning

4-3. Cares After Outdoor Use

After using the unit outdoors (especially dusty areas, seaside, sandy beach or the like), it is recommended to do the following items.

1. Dust off the hinges, packing portion and movements of the display panel and control panel using a vacuum cleaner.
2. Clean off sand and other dust in the unit carefully.
3. Clean the video heads, upper and lower drums and stationary heads. (Refer to Sections 4-2-3, 4-2-4, 4-2-5)
4. Clean the tape running surfaces (tape guides, capstan shaft and pinch roller). (Refer to Section 4-2-6.)
5. Clean the connectors on the connector panel.
6. Carry out the common operation check (REC, PLAY etc.) and check that the unit has not an abnormal sound or action.

If the unit has an abnormal condition, please consult your local Sony's sales/service office.



Cares After Outdoor Use

Section 5
Spare Parts

5-1. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

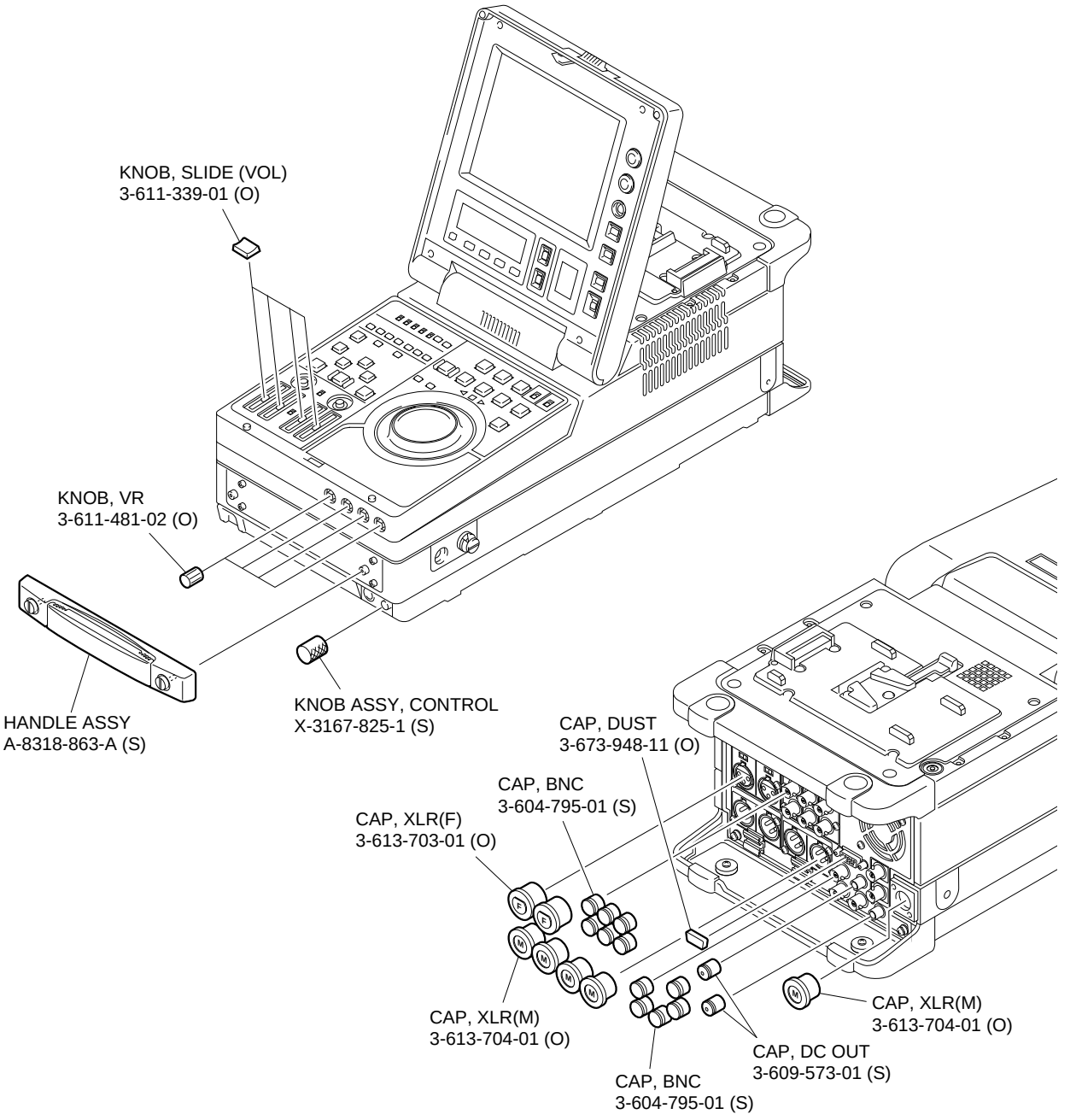
Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

5-2. Exploded Views

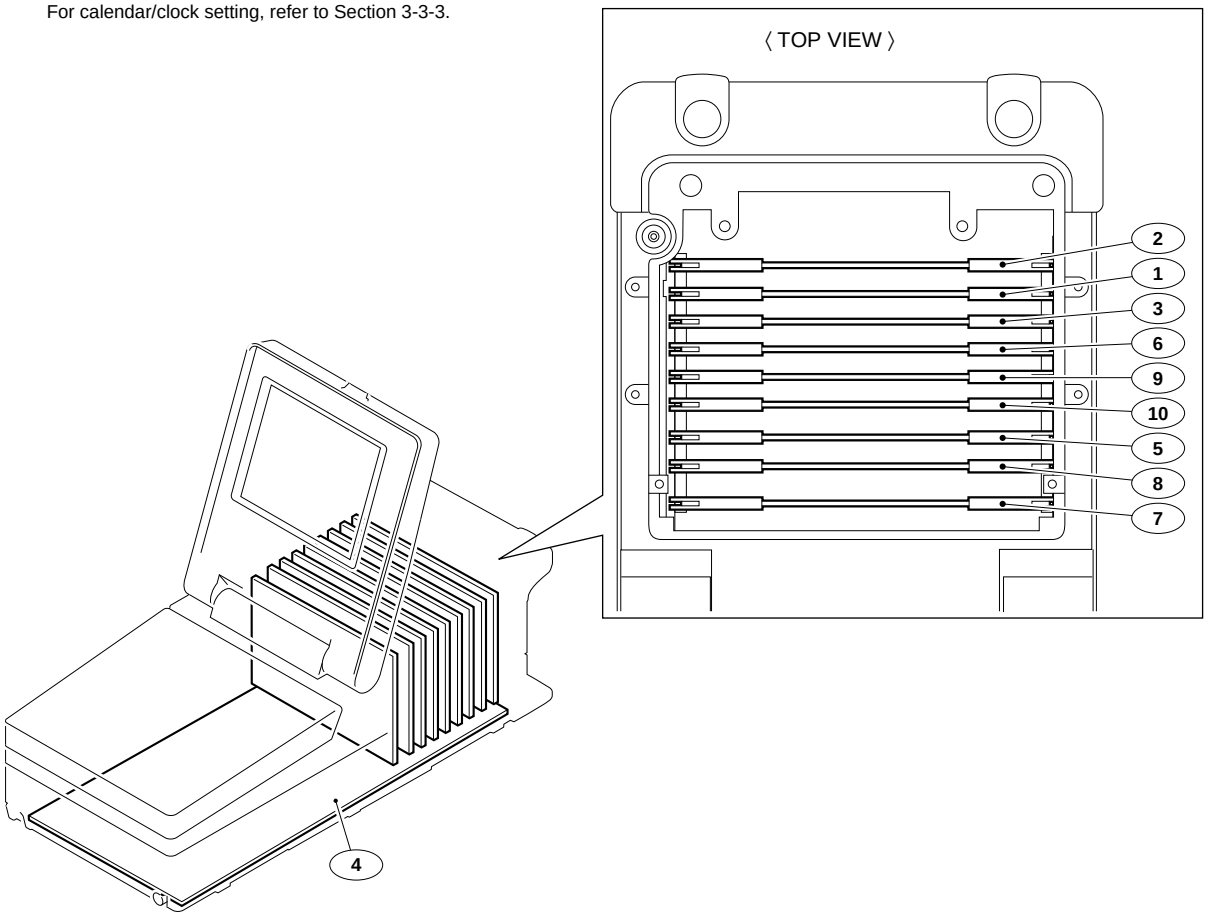
Ex.) KNOB, SLIDE (VOL) ← Description
3-611-339-01 (O) ← Part No. (Supply code)



5-3. Pulg-in Boards

No.	Board name	Part No.	SP	Description	Whether setting/adjustment after board replacement is required or not
1	APR-27	A-8316-682-A	o	MOUNTED CIRCUIT BOARD, APR-27	Not Required
2	AU-249	A-8316-684-A	o	MOUNTED CIRCUIT BOARD, AU-249	Required*1
3	DEC-97	A-8316-704-A	o	MOUNTED CIRCUIT BOARD, DEC-97	Required*1
4	DM-114	A-8316-714-A	o	MOUNTED CIRCUIT BOARD, DM-114 (for DNW-A25)	Required*1
		A-8316-716-A	o	MOUNTED CIRCUIT BOARD, DM-114P (for DNW-A25P)	Required*1
5	DPR-87	A-8316-710-A	o	MOUNTED CIRCUIT BOARD, DPR-87	Not Required
6	SDI-23	A-8316-672-A	o	MOUNTED CIRCUIT BOARD, SDI-23	Required*1
7	SY-259	A-8316-678-A	o	MOUNTED CIRCUIT BOARD, SY-259	Required*2
8	SY-260	A-8316-680-A	o	MOUNTED CIRCUIT BOARD, SY-260	Not Required
9	TG-191	A-8316-688-A	o	MOUNTED CIRCUIT BOARD, TG-191 (for DNW-A25)	Required*1
		A-8316-690-A	o	MOUNTED CIRCUIT BOARD, TG-191P (for DNW-A25P)	Required*1
10	VPR-34	A-8316-698-A	o	MOUNTED CIRCUIT BOARD, VPR-34	Required*1

*1: For adjustment, refer to Section 6 of the maintenance manual Part2 Volume1.
*2: For switch setting, refer to Section 1-9.
For calendar/clock setting, refer to Section 3-3-3.



5-4. Optional Accessories List

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-6772-374-B	s	BELT ASSY, SHOULDER
11pcs	3-604-795-01	s	CAP,BNC
2pcs	3-609-573-01	s	CAP,DC OUT
2pcs	3-613-703-01	o	CAP,XLR(F)
5pcs	3-613-704-01	o	CAP,XLR(M)
1pc	3-673-948-11	o	CAP,DUST

5-5. Fixtures List

Part No.	SP	Description
A-8316-723-A	o	EXTENSION BOARD (EX-617)
A-8317-304-A	o	HN-257 MOUNTED CIRCUIT BOARD
J-6035-070-A	o	EXTRUCTION TOOL (for PLCC socket)
J-6080-840-A	s	INSPECTION MIRROR
J-6252-520-A	o	TORQUE SCREWDRIVER (12 kgf•cm) (1.2 N•m)
J-6325-400-A	o	TORQUE SCREWDRIVER (3 kgf•cm)
J-6325-110-A	o	TORQUE SCREWDRIVER'S BIT (l = 75 mm)
J-6325-380-A	o	TORQUE SCREWDRIVER'S BIT (l = 162 mm)
J-6322-420-A	o	TAPE GUIDE ADJUSTMENT DRIVER (45)
J-6323-530-A	o	STOP WASHER FASTENING TOOL
J-6323-890-A	o	TORQUE CASSETTE (FWD BACK TEN.)
J-6324-150-A	o	REEL TABLE HEIGHT ADJUSTMENT TOOL
J-6326-120-A	o	HEXAGONAL BIT (d = 1.5 mm, l = 85 mm)
J-6530-380-A	o	CONVERSION CABLE, 6P-9P
J-7032-610-A	o	CASSETTE REFERENCE PLATE
3-184-527-01	s	CLEANING CLOTH (15 cm x 15 cm)
3-649-266-01	s	PARALLEL PIN (d = 1.6 mm)
3-703-358-04	o	PARALLEL PIN (d = 2.0 mm)
7-651-000-10	s	SONY GREASE SGL-601 (50 g)
7-651-000-11	s	SONY GREASE SGL-801 (50 g)
7-661-018-18	s	DIAMOND OIL NT-68 (50 ml)
7-700-751-01	s	BOX DRIVER (d = 4.5 mm)
8-960-075-01	o	ALIGNMENT TAPE, SR5-1 (for 525/60 system)
8-960-075-11	o	ALIGNMENT TAPE, SR2-1 (for 525/60 system)
8-960-075-51	o	ALIGNMENT TAPE, SR5-1P (for 625/50 system)
8-960-075-61	o	ALIGNMENT TAPE, SR2-1P (for 625/50 system)
8-960-096-01	o	ALIGNMENT TAPE, CR2-1B (for analog Betacam, NTSC)
8-960-096-41	o	ALIGNMENT TAPE, CR5-1B (for analog Betacam, NTSC)
8-960-096-51	o	ALIGNMENT TAPE, CR2-1B PS (for analog Betacam, PAL)
8-960-097-44	o	ALIGNMENT TAPE, CR5-2 (OXIDE)(for analog Betacam, NTSC)
8-960-097-45	o	ALIGNMENT TAPE, CR8-1 (OXIDE)(for analog Betacam, NTSC)
8-960-096-91	o	ALIGNMENT TAPE, CR5-1B PS (METAL)(for analog Betacam, PAL)
8-960-096-86	o	ALIGNMENT TAPE, CR8-1B PS (METAL)(for analog Betacam, PAL)
8-960-098-44	o	ALIGNMENT TAPE, CR5-2A PS (OXIDE)(for analog Betacam, PAL)
8-960-098-45	o	ALIGNMENT TAPE, CR8-1A PS (OXIDE)(for analog Betacam, PAL)
9-919-573-01	s	CLEANING LIQUID
A-8318-391-A	o	CN-1699 MOUNTED CIRCUIT BOARD
1-958-595-11	o	EXTENSION HARNESS (CN-MB)

Section 6
Overall Block Diagram and Circuit Description

(1) Video Signal Processing Block (CP-317, DEC-97, SDI-23, VPR-34, DP-265, and TG-191 Boards)

Recording system

The analog composite video signal input from the external equipment to the VIDEO IN connector (on the CP-317 board) is converted from analog to digital on the DEC-97 board. After that, the signal is converted into a digital component signal using a composite decoder and sent to the input time base corrector (TBC) on the SDI-23 board.
The SDI signal input from the external equipment to the SDI IN connector is converted from serial to parallel on the SDI-23 board and separated into a video signal and audio signal using a D1 decoder. One of the SDI video signal and the analog composite video signal described above is selected using an input TBC. The setup component of the video signal output from the input TBC is eliminated (for an NTSC system only), and VITC signal of the video signal is read and then added to the video signal. The signal is then sent to the DPR-87 board as REC data. It is also sent to the VPR-34 board as EE data.

Playback system

The SX PB video signal sent from the DPR-87 board is processed by the JOG processing block on the VPR-34 board and sent to the video processor IC. In the video processor IC, one of the SX PB video signal, the analog Betacam PB video signal sent from the DM-114/114P board, and the EE video signal sent from the SDI-23 board is selected, and selected signal is video processed (gain adjustment, setup adjustment, and blanking addition). The digital component video signal output from the video processor IC branches to two paths using a composite encoder IC. One is encoded to a digital composite video signal, and the other is directly sent to the SDI-23 and DP-265 boards.
The digital composite video signal output from the composite encoder IC is converted from digital to analog, and output from the connector panel (CP-317 board).
The output signal branches to two paths. Characters can be superimposed on VIDEO OUTPUT2.
The digital component video signal sent to the SDI-23 board is multiplexed with an audio signal, converted from parallel to serial, then output from the connector panel.
The digital component video signal sent to the DP-265 board is added in characters and scan-converted in the vertical direction. After that, the video signal is performed for contrast adjustment, RGB signal conversion, and gain adjustment. The signal is then sent to the color LCD monitor (VGA 640 × 480).

Sync system

A sync signal is generated on the TG-191/191P board. The signal input from the REF VIDEO IN or VIDEO IN connector is sync-separated to produce a sync signal (sync or burst). For SDI input locking, moreover, a sync signal is generated on the SDI-23 board by the signal input from the SDI IN connector. Based on the generated sync signal, a REF signal and various timing signals (CF, GOP, FRAME , HD, VD, and AUDIO ID signals) for the unit are generated on the TG-191/191P board . In addition, the video and audio clock signals synchronized with this sync signal are generated and sent to each board together with timing signals.

(2) Audio Signal Processing Block (CP-316, KY-400, AU-249, SDI-23, APR-27, and HP-88 Boards)

The analog audio signal input from the external equipment to the AUDIO IN connector (on the CP-316 board) is switched in an input level on the CP-316 board and controlled in a level on the KY-400 board. The resultant signal is sent to the AU-249 board. On the CP-316 board, phantom power is also supplied.
An automatic gain control (AGC) is applied to the audio signal sent to the AU-249 board. This audio signal and the Dolby noise-reduced analog Betacam PB audio signal are switched and emphasized. The resultant signal is converted from analog to digital and sent to the APR-27 board. For the SDI signal input from the external equipment to the SDI In connector, an audio signal and various control signals (mute flag, Z flag, and C bit signals) are extracted on the SDI-23 board and sent to the APR-27 board.
On the APR-27 board, five-field sequence processing (for NTSC only) and JOG processing are performed for the SX PB audio signal sent from the DPR-87 board.
This SX PB audio signal, the analog input signal sent from the AU-249 board, and the SDI input signal sent from the SDI-23 board are switched, swap in channels, mixed in channels, and muted. These signals are then sent to the boards below.

REC signal: To the DPR-87 board
LINE and MONITOR output signals: To the AU-249 board
SDI output signal: To the SDI-23 board

The LINE output signal sent to the AU-249 board is converted from digital to analog and de-emphasized. The signal is then output through the output amplifier on the CP-316 board from the connector panel.

The MONITOR output signal sent to the AU-249 board is converted from digital to analog and de-emphasized. The output signal is then gain-controlled on the HP-88 board and output through the output amplifier on the CP-316 board from the connector panel.
The MONITOR output signal can also be monitored using headphones or speaker.
The channel type of the signal to be output to the LINE and MONITOR output connectors can be set using a sub LCD menu.
The output audio signal sent to the SDI-23 board is multiplexed with a video signal using an SDI encoder, converted from parallel to serial, and output from the connector panel.

(3) Digital Signal Processing Block (DPR-87 Board) and RF Block (EQ-72 Board and Drum Assembly)

Recording system

One of the external input video signal (SDI/composite) and SX PB video signal sent from the SDI-23 board is selected using the video data selector on the DPR-87 board. The selected signal is passed through a pre-filter and SX-encoded
using a bit rate reduction encoder to compress the data rate to approximately 1/10.
The compressed video signal and the REC audio signal sent from the APR-27 board are adjusted in delay ,and multiplexed using an ECC encoder. An error correction code is added after that. In this stage, the system data, including NT (non-tracking) control information, as well as outer and inner ECC codes is also added and sent to the EQ-72 board.
The REC signal sent from the DPR-87 board is level-modulated on the EQ-72 board according to the REC current value and sent through a rotary transformer to the drum as REC data. Moreover, the multiplexed select control signals of each head are sent to the drum.
The REC data sent to the drum is recorded on the tape. At the same time, the switching timing for head and REC current value are controlled by a an MPX decoder,

Playback system

The PB output signals of each head are amplified using a pre-amplifier. After that, the PB RF output signals of each head are multiplexed based on the decoded head select control signal and sent through a rotary transformer to the EQ-72 board.
One of the two-channel PB RF signals sent to the EQ-72 board is sent through an amplifier to the DM-114/114P board as an analog Betacam PB signal. In the other channel, waveform equalization, viterbi decoding, and inner error correction are performed, and the PB RF signal is sent to the DPR-87 board as a Betacam SX PB signal.
The Betacam SX PB signal sent from the EQ-72 board is non-tracked and outer-error corrected on the DPR-87 board. The signal is then separated into a video signal and audio signal. The video signal also branches to two paths.

One is sent to the video data selector on the DPR-87 board as a REC signal during insert editing. The other is sent to the VPR-34 board and processed by a video jog processing block. Like the video signal, the audio signal is also sent to the APR-27 board and processed by an audio jog processing block.

(4) Analog Betacam Playback Block (DM-114/114P and PA-218 Boards)

An analog Betacam PB video signal is processed on the DM-114 board. The RF signals (Y and C signals) sent from the EQ-72 board are waveform-equalized and FM-demodulated, then converted from analog to digital. The converted signals are then time-base corrected using field memory for various processings (dropout compensation, edge noise reduction, etc.), Y/C signal multiplexing,
and setup elimination (for NTSC only) and sent to the VPR-34 board. A longitudinal analog Betacam audio signal is processed on the PA-218 board. The PB signal sent from the audio head is waveform-equalized and sent to the AU-249 board.

(5) System Control Block and Servo Block (SY-259, SY-260, and SV-194 Boards)

This unit contains two CPUs (SY1 CPU and SY2 CPU) for system control and one CPU (Servo CPU) for servo control.

SY1 CPU (IC106 on the SY-259 board) uses RISC CPU, and the operation clock is 20 MHz.
The SY1 CPU controls the operation below.

- Switch and LED control on the control panel
- Receive and transmit the signals with external control equipment
- Sub-LCD display
- Superimposition of characters on the monitor output and LCD monitor

Like SY1 CPU, SY2 CPU (IC108 on the SY-260 board) also uses RISC CPU, and the operation clock is 20 MHz.
The SY2 CPU controls the operation below.

- Control of each main board
- Self diagnosis of each main board
- LTC signal read and write

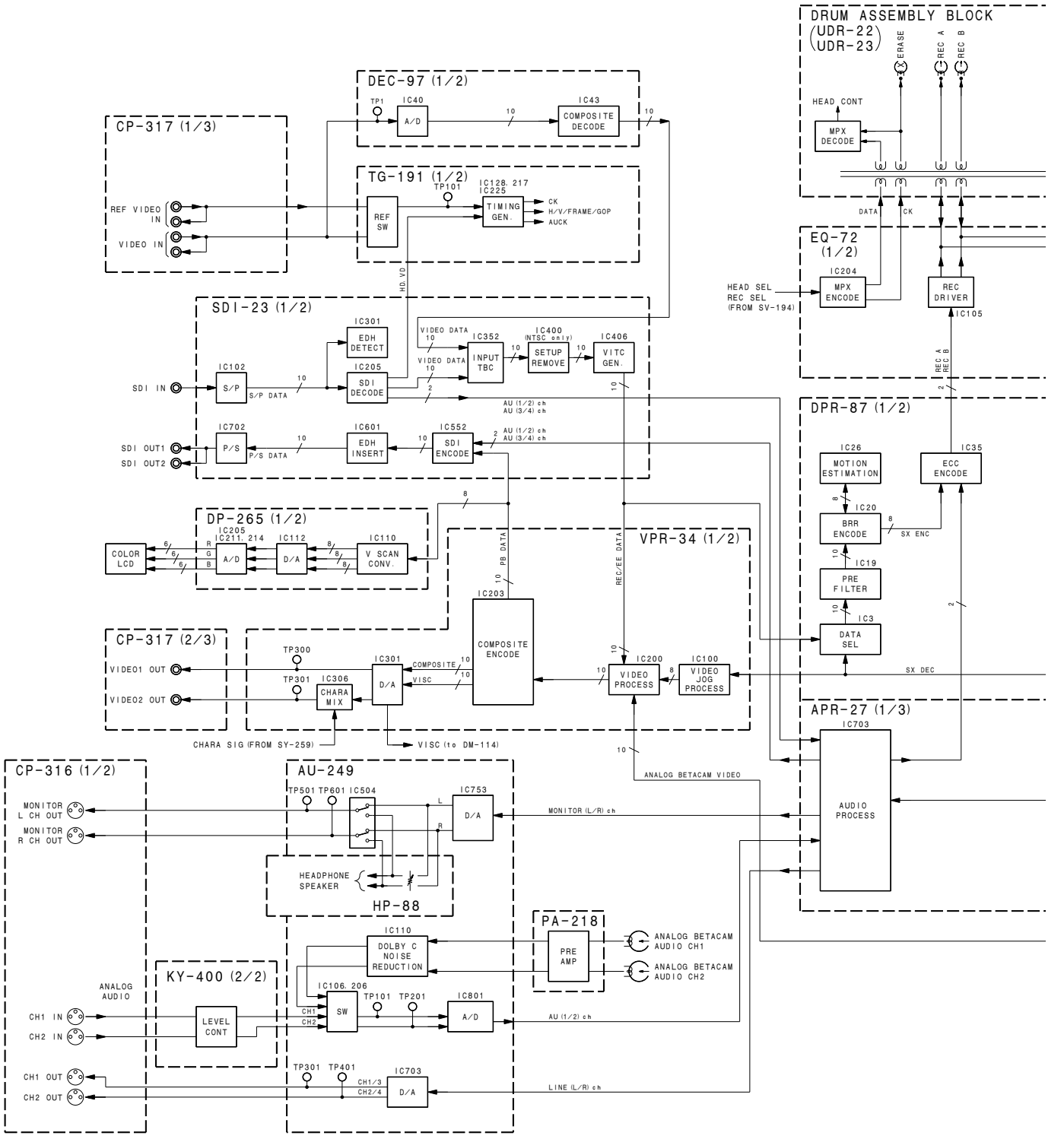
Servo CPU uses a 16-bit CPU, and the operation clock is 10 MHz.
The servo CPU controls the operation below.

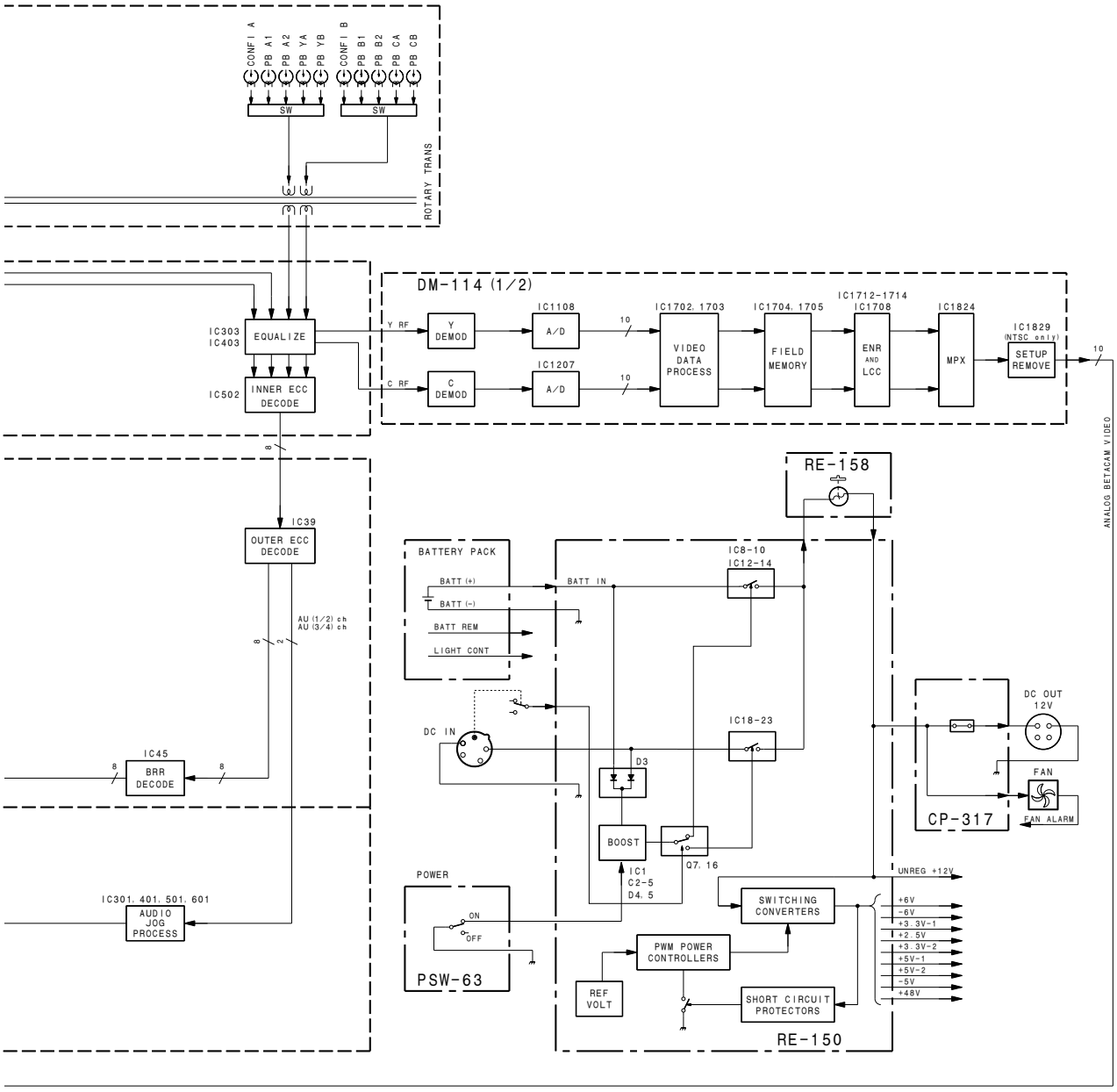
- Control of drum and motors
- Detection of sensor and FG/PG

The communication between SY1 CPU and SY2 CPU is carried out via the dual port RAM (IC400) on the SY-259 board.
The communication between SY2 CPU and servo CPU is carried out via the dual port RAM (IC300) on the SV-194 board.

(6) Power Supply Block (RE-150, RE-158, and PSW-63 Boards)

The +12 V DC voltage input from the battery or DC IN connector is sent through the breaker on the RE-158 board to the RE-150 board. The voltage is then turned on and off using the power switch on the PSW-63 board and sent to each board as an UNREG +12 V. Moreover, various DC voltages are generated using the DC-DC converter based on a synchronous PWM switching regulator and supplied to each board.


DRUM ASSEMBLY BLOCK
(UDR-22)
(UDR-23)
ERASE
REC A
REC B
HEAD CONT
MPX DECODE
DATA
CK
EQ-72 (1/2)
IC204
MPX ENCODE
REC DRIVER
IC105
HEAD SEL
REC SEL
(FROM SV-194)
REC A
REC B
DPR-87 (1/2)
IC26
MOTION ESTIMATION
IC35
ECC ENCODE
IC20
BRR ENCODE
SX ENC
IC19
PRE FILTER
IC3
DATA SEL
SX DEC
APR-27 (1/3)
IC703
AUDIO PROCESS
DEC-97 (1/2)
TP1
IC40
A/D
IC43
COMPOSITE DECODE
CP-317 (1/3)
REF VIDEO IN
VIDEO IN
TG-191 (1/2)
TP101
IC128. 217
IC225
TIMING GEN.
REF SW
CK
H/V/FRAME/GOP
AUCK
HD. VD
SDI-23 (1/2)
IC301
EDH DETECT
IC205
SDI DECODE
IC352
INPUT TBC
IC400
(NTSC only)
SETUP REMOVE
IC406
VITC GEN.
VIDEO DATA
IC102
S/P
S/P DATA
SDI IN
AU (1/2) ch
AU (3/4) ch
IC702
P/S
IC601
EDH INSERT
IC552
SDI ENCODE
SDI OUT1
SDI OUT2
DP-265 (1/2)
IC205
IC211. 214
IC112
IC110
COLOR LCD
A/D
D/A
V SCAN CONV.
VPR-34 (1/2)
PB DATA
REC/EE DATA
IC203
COMPOSITE ENCODE
IC200
VIDEO PROCESS
IC100
VIDEO JOG PROCESS
CP-317 (2/3)
TP300
TP301
IC306
CHARA MIX
IC301
D/A
COMPOSITE
VISC
VIDEO1 OUT
VIDEO2 OUT
CHARA SIG (FROM SY-259)
VISC (to DM-114)
ANALOG BETACAM VIDEO
CP-316 (1/2)
MONITOR L CH OUT
MONITOR R CH OUT
AU-249
TP501 TP601 IC504
IC753
D/A
MONITOR (L/R) ch
HEADPHONE SPEAKER
HP-88
PA-218
IC110
DOLBY C NOISE REDUCTION
PRE AMP
ANALOG BETACAM AUDIO CH1
ANALOG BETACAM AUDIO CH2
KY-400 (2/2)
ANALOG AUDIO
CH1 IN
CH2 IN
LEVEL CONT
IC106. 206
SW
TP101 TP201
IC801
A/D
AU (1/2) ch
CH1 OUT
CH2 OUT
TP301 TP401
IC703
D/A
LINE (L/R) ch

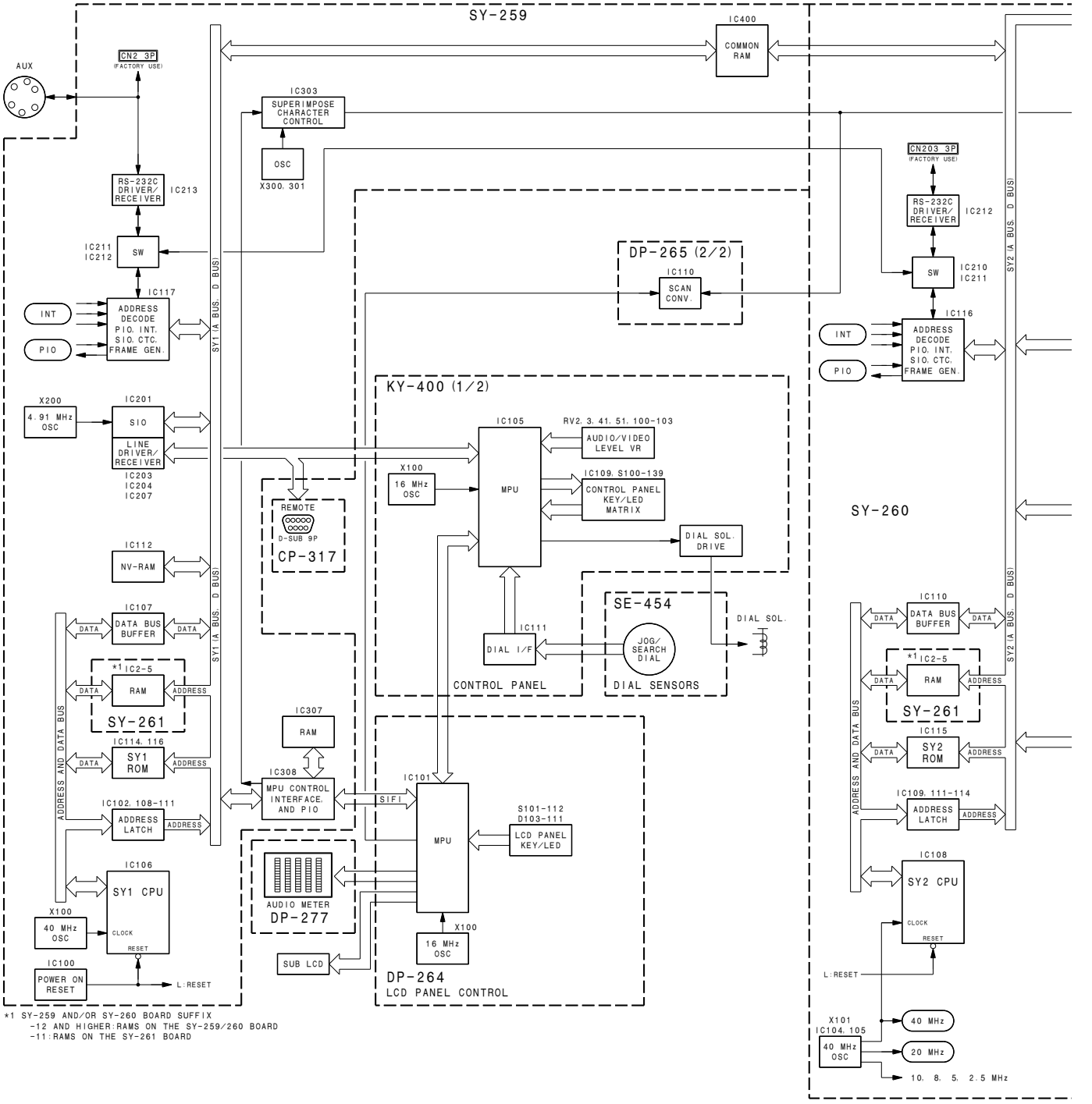


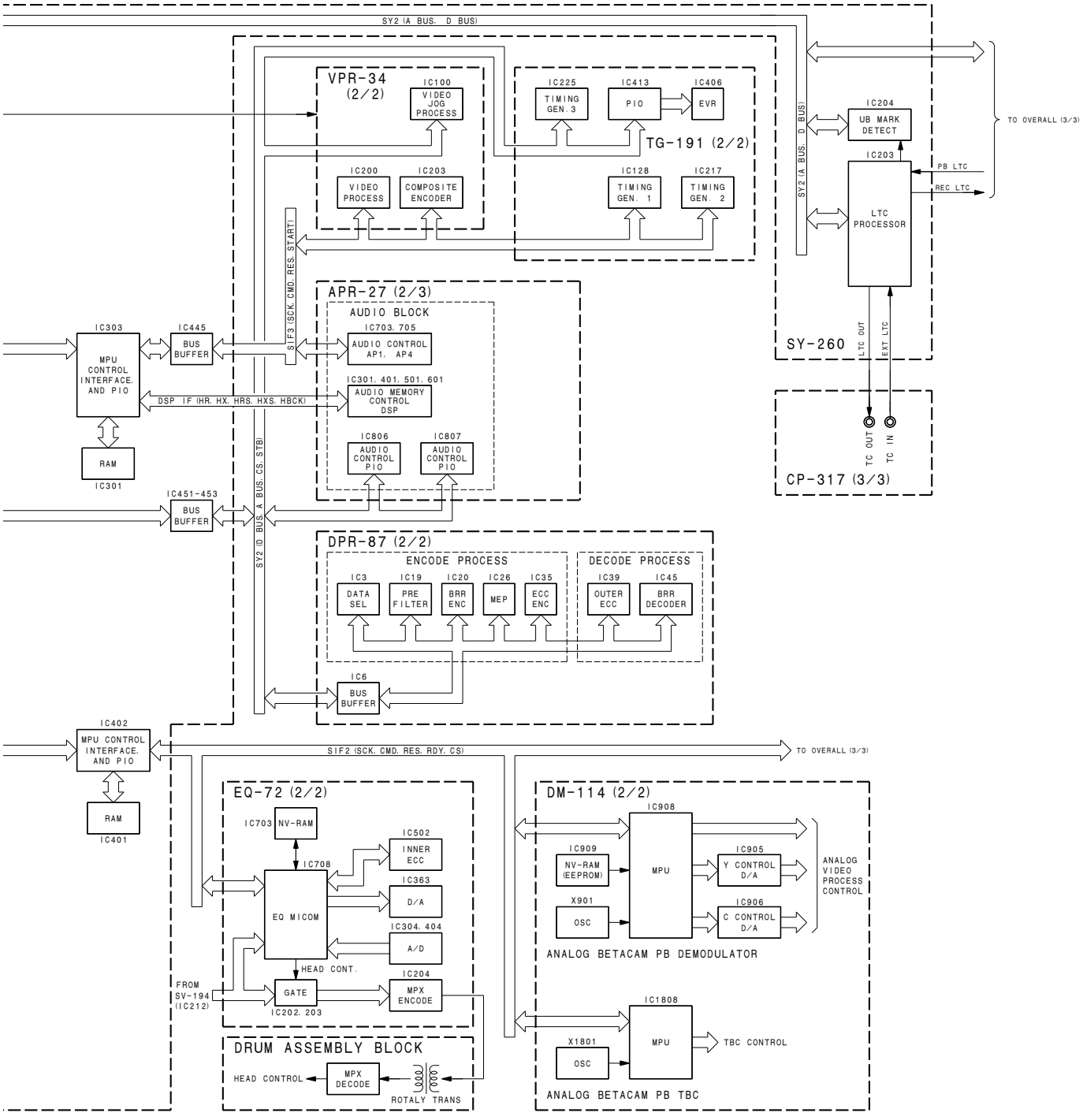
SIGNAL PROCESSING SYSTEM

OVERALL (1/3)

DNW-A25
DNW-A25P

B-¥DNWA25-OA-S/M-01


SY-259
IC400
COMMON RAM
AUX
CN2 3P
(FACTORY USE)
IC303
SUPERIMPOSE CHARACTER CONTROL
OSC
X300, 301
RS-232C DRIVER/ RECEIVER
IC213
IC211
IC212
SW
IC117
INT
PIO
ADDRESS DECODE PIO, INT, SIO, CTC, FRAME GEN.
SY1 (A BUS, D BUS)
DP-265 (2/2)
IC110
SCAN CONV.
CN203 3P
(FACTORY USE)
RS-232C DRIVER/ RECEIVER
IC212
SW
IC210
IC211
IC116
INT
PIO
ADDRESS DECODE PIO, INT, SIO, CTC, FRAME GEN.
SY2 (A BUS, D BUS)
KY-400 (1/2)
X200
4.91 MHz OSC
IC201
SIO
LINE DRIVER/ RECEIVER
IC203
IC204
IC207
IC105
RV2, 3, 41, 51, 100-103
AUDIO/VIDEO LEVEL VR
X100
16 MHz OSC
MPU
IC109, S100-139
CONTROL PANEL KEY/LED MATRIX
DIAL SOL. DRIVE
REMOTE
D-SUB 9P
CP-317
SY-260
IC112
NV-RAM
SE-454
DIAL SOL.
IC111
DIAL I/F
JOG/ SEARCH DIAL
CONTROL PANEL
DIAL SENSORS
IC110
DATA BUS BUFFER
IC107
DATA BUS BUFFER
*1 IC2-5
RAM
SY-261
IC307
RAM
IC114, 116
SY1 ROM
IC308
MPU CONTROL INTERFACE, AND PIO
SIFI
IC101
MPU
S101-112
D103-111
LCD PANEL KEY/LED
IC102, 108-111
ADDRESS LATCH
ADDRESS AND DATA BUS
IC106
SY1 CPU
X100
40 MHz OSC
CLOCK
RESET
IC100
POWER ON RESET
L:RESET
AUDIO METER
DP-277
SUB LCD
X100
16 MHz OSC
DP-264
LCD PANEL CONTROL
IC115
SY2 ROM
IC109, 111-114
ADDRESS LATCH
IC108
SY2 CPU
L:RESET
X101
IC104, 105
40 MHz OSC
40 MHz
20 MHz
10, 8, 5, 2.5 MHz
*1 SY-259 AND/OR SY-260 BOARD SUFFIX
-12 AND HIGHER:RAMS ON THE SY-259/260 BOARD
-11:RAMS ON THE SY-261 BOARD

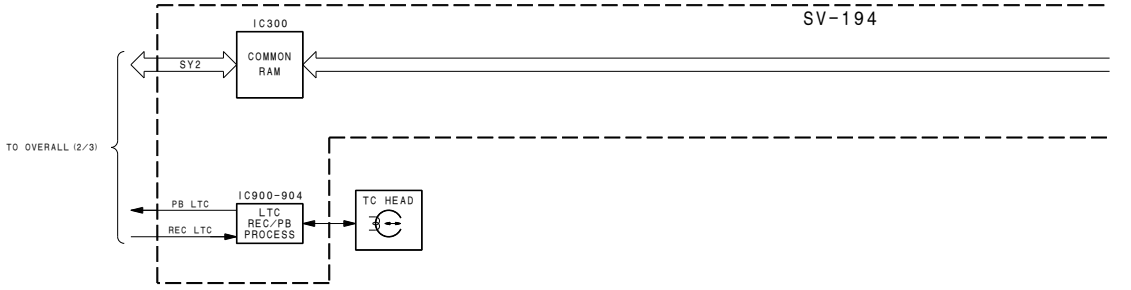


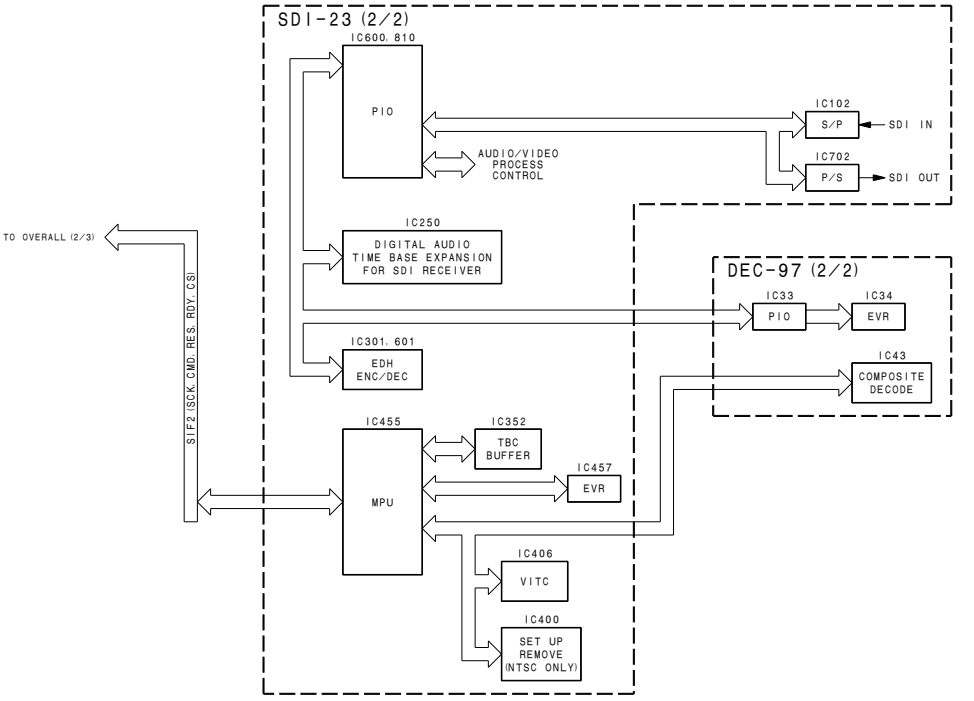
SERVO/SYSTEM CONTROLSYSTEM (1/2)

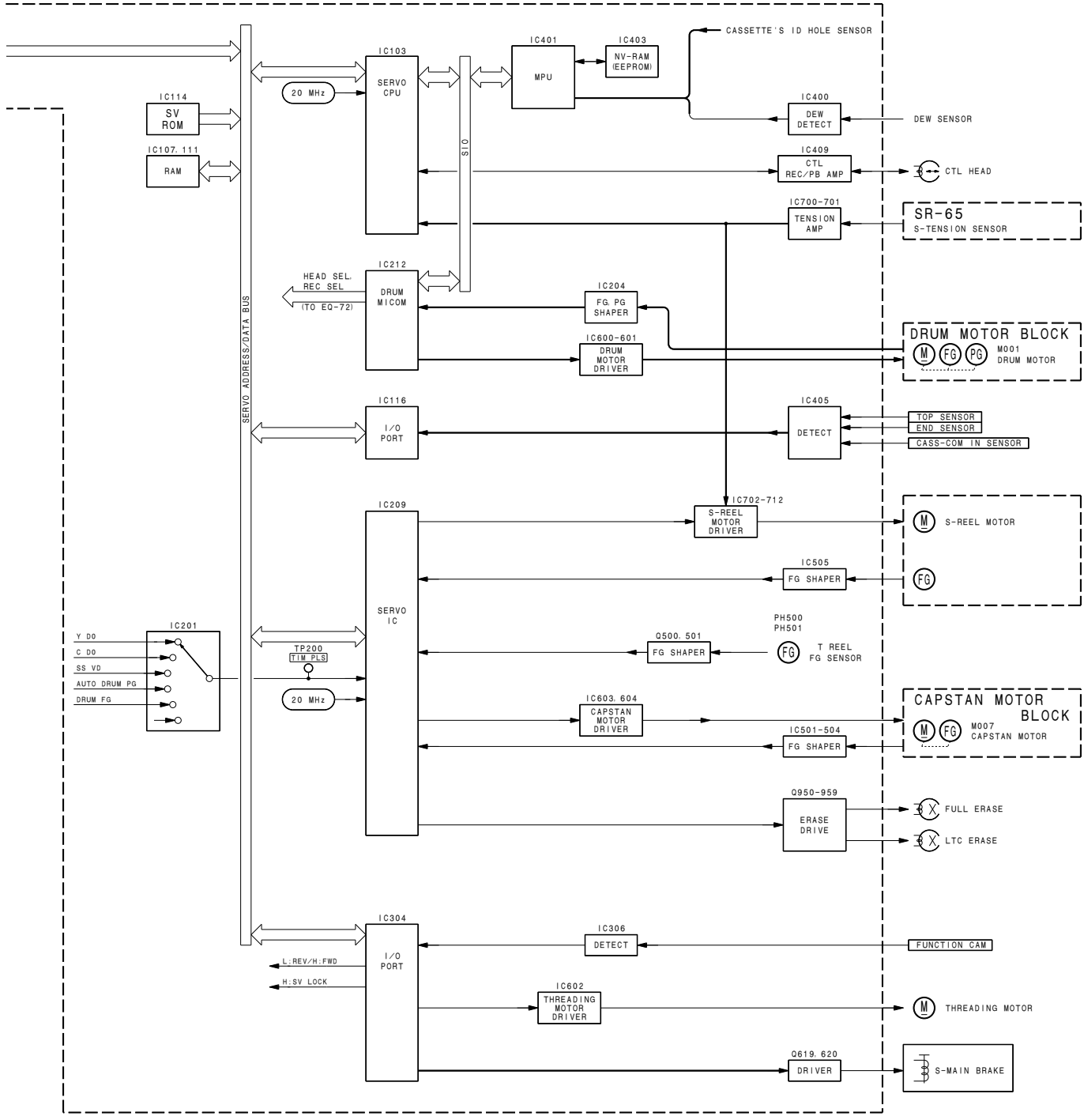
OVERALL (2/3)

DNW-A25
DNW-A25P

B-¥DNWA25-OA-S/M-01


SV-194
IC300
COMMON RAM
SY2
TO OVERALL (2/3)
PB LTC
REC LTC
IC900-904
LTC REC/PB PROCESS
TC HEAD


SDI-23 (2/2)
IC600, 810
PIO
IC102
S/P
SDI IN
AUDIO/VIDEO PROCESS CONTROL
IC702
P/S
SDI OUT
TO OVERALL (2/3)
IC250
DIGITAL AUDIO TIME BASE EXPANSION FOR SDI RECEIVER
DEC-97 (2/2)
IC33
PIO
IC34
EVR
IC301, 601
EDH ENC/DEC
IC43
COMPOSITE DECODE
SIF2 (SCK, CMD, RES, RDY, CS)
IC455
MPU
IC352
TBC BUFFER
IC457
EVR
IC406
VITC
IC400
SET UP REMOVE (NTSC ONLY)



SERVO/SYSTEM CONTROLSYSTEM (2/2)

OVERALL (3/3)

DNW-A25
DNW-A25P
B-¥DNWA25-OA-S/M-01

Appendix A
Setting Check Sheet

It is recommended to make a photocopy of check sheets given in this appendix and write down setup conditions such as switches' setting in the check sheets according to application.
If setup conditions are noted, the settings can be returned easily to its original condition after being changed temporarily (when operating condition changes and so on).
And when the unit is to be checked, maintained or repaired, please attach the filled-in check sheets to the unit.
If system combinations are frequently changed according to use, it is convenient to prepare check sheets for every system. Make use of the check sheets to avoid mistakes.

Model name: DNW-_____ Serial No.: _____

- Firmware

  SYS1 ROM version: _____
  SYS2 ROM version: _____
  SV1 ROM version: _____
  KY ROM version: _____

- Hours meter

  Write down readings of hours meter when checking, servicing or maintaining the unit.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS(Resettable)	/	
H13: TAPE RUNNING HOURS(Resettable)	/	
H14: THREADING COUNTER(Resettable)	/	

Connector panel

Switch		Factory setting	Setting		
Analog audio input level	CH1/3	+4 dBu	☐ –60	☐ 0	☐ +4
	CH2/4	+4 dBu	☐ –60	☐ 0	☐ +4
48V	CH1/3	OFF	☐ OFF	☐ ON	
(at –60 dBu input level setting)	CH2/4	OFF	☐ OFF	☐ ON	
Reference video input 75 Ω		ON	☐ ON	☐ OFF	
Composite video input 75 Ω		ON	☐ ON	☐ OFF	

Control panel

Switch	Factory setting	Setting	
REC/INHIBIT	OFF	☐ ON	☐ OFF
SP TAPE	SX	☐ SX	☐ SP PB ONLY
LOCAL/REMOTE	LOCAL	☐ LOCAL	☐ REMOTE
TC GENERATOR	INT	☐ INT	☐ EXT
	PRESET	☐ PRESET	☐ REGEN
	F-RUN	☐ F-RUN	☐ R-RUN
PB /PB/EE	PB	☐ PB	☐ PB/EE
METER	CH-1/2	☐ CH-1/2	☐ CH-3/4
AUDIO INPUT	PRESET	☐ PRESET	☐ VARIABLE
PB AUDIO	PRESET	☐ PRESET	☐ VARIABLE

Internal Slit-lands

Board	Name	Channel	Ref. No.	Factory setting	Setting
AU-249	Audio input headroom	CH-1	SL101 SL102	OPEN (20 dB) OPEN	
		CH-2	SL201 SL202	OPEN (20 dB) OPEN	
	Audio output headroom	CH-1	SL301 SL302	OPEN (20 dB) OPEN	
		CH-2	SL401 SL402	OPEN (20 dB) OPEN	
	Monitor output headroom	L	SL501 SL502	OPEN (20 dB) OPEN	
		R	SL601 SL602	OPEN (20 dB) OPEN	
RE-150	Power select		SL1	OPEN	

Internal Switches

Note Never change setting of factory-use switches.

Board	Switch No.		: Name		Factory setting	Setting
AU-249	S1	1-4	: Factory use		OFF (OPEN)	–
DM-114/	S101		: Y EQ TEST		NORMAL POSITION	–
DM-114P	S301		: C EQ TEST		NORMAL POSITION	–
	S501		: Factory use		ON	–
	S901	1	: RF adjusting switch		OFF (OPEN)	–
		2	: Factory use		OFF (OPEN)	–
		3	: AGC OFF		OFF (OPEN)	–
		4	: Factory use		OFF (OPEN)	–
	S1701	1	: Y MUTE		OFF (OPEN)	
		2-3	: Factory use		OFF (OPEN)	–
		4	: C MUTE		OFF (OPEN)	
		5	: COMB		OFF (OPEN)	
		6-8	: Factory use		OFF (OPEN)	–
	S1801	1	: D CLP OFF		OFF (OPEN)	
		2-4	: Factory use		OFF (OPEN)	–
PA-218	S500		: CH1 HEAD TUNE Switch		Used during adjustment	–
	S600		: CH2 HEAD TUNE Switch		Used during adjustment	–
SV-194	S100	1*1	: CASSETTE COMPARTMENT LOCK		OFF (OPEN)	–
		2*2	: SERVO ERR NOT DET		OFF (OPEN)	–
		3	: Factory use		OFF (OPEN)	–
		4	: AUTO-TRACKING OFF		OFF (OPEN)	–
		5-6	: Factory use		OFF (OPEN)	–
SY-259	S201	1	: EXTENDED MENU		OFF (OPEN)	
		2	: MAINTE MODE ACCESS		OFF (OPEN)	
		3-8	: Factory use		OFF (OPEN)	–
	S202	1-4	: Factory use		OFF (OPEN)	–
		Never change the settings of S202 for bits 5 to 8 since each is set according to the characteristics of the unit				
		5, 6	: PLAYER/RECORDER			
				5:	ON (CLOSE)	–
				6:	ON (CLOSE)	–
		7	: J/UC		ON (CLOSE)	–
		8	: 525/625	DNW-A220:	OFF (OPEN)	–
				DNW-A220P:	ON (CLOSE)	–
SY-260	S201	1-8	: Factory use		OFF (OPEN)	–

∗1, ∗2: Never change setting of the switches S101-1 and S101-2.

For 525/60 System

The sub LCD menu and the setup menu can store the data for 525/60 and 625/50 systems independently. Then fill out the check sheets for each system, selecting system using the setup menu ITEM-013: 525/625 SYSTEM SELECT.

525/60 system : Pages A-4 to A-10
625/50 system: Pages A-11 to A-18

Some menu items in the check sheets may be added or changed depending on the ROM version. In this case, please write down notes in the margin.

Sub LCD menu

HOME page

ITEM	Factory setting	Setting
AUDIO SETTING BANK	AU-1	
TIME CODE READER	AUTO	
VITC	VITCON	
VIDEO INPUT	SDI	

Audio setting page

ITEM		Factory setting	AU-1	AU- 2	AU- 3	AU-4
AU SG		OFF				
AGC		OFF				
LIMITER		OFF				
AUDIO INPUT IN-1		SDI-1				
AUDIO INPUT IN-2		SDI-2				
AUDIO INPUT IN-3		SDI-3				
AUDIO INPUT IN-4		SDI-4				
MIX/SWAP	CH-1	IN-1				
	CH-2	IN-2				
	CH-3	IN-3				
	CH-4	IN-4				
EMPH		OFF				
DOLBY		OFF				
LINE OUT		CH-1/2				
MONITOR LEVEL		FIX				
MONITOR CH	L	CH-1				
	R	CH-2				

Video setting page

ITEM		Factory setting	Setting
VIDEO	VIDEO IN	80 PRESET	
	ZEBRA	OFF	
	OUT REF	REF	
PROCESS CONTROL		PANEL	
(When the above item is set to	Y/C DLY	800 PRESET	
PANEL)	SYNC PH	80	
	SC PH	200	

General setting page

ITEM	Factory setting	Setting
SUPER	ON	
BAT-END	10.5	
BAT-NE	11.0	
BACKLGT	NORMAL	
CAPSTAN LOCK	4FD	
KEY INH	OFF	
DF/NDF	DF	
DISPLAY	ON	

Set up menu

Note When Banks 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to write down the current menu settings first, before recalling Banks 1 to 4. Then write down the Banks' settings.

Main menu

ITEM-000 series: Operational parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001:	PREROLL TIME	5S					
002:	CHARACTER H-POSITION	14					
003:	CHARACTER V-POSITION	56					
004:	SYNCHRONIZE	ON					
005:	DISPLAY INFORMATION SELECT	T&STA					
006:	LOCAL FUNCTION ENABLE	ST&EJ					
007:	TAPE TIMER DISPLAY	+−12H					
008:	MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009:	CHARACTER TYPE	WHITE					
011:	CHARACTER V-SIZE	×1					
013*1:	525/625 SYSTEM SELECT	OFF	–	–	–	–	–
014:	SEQUENTIAL RECORD MODE	OFF					

∗1: ITEM-013 has no relation with Banks.

ITEM-B00 series: Menu bank parameter

It is unnecessary to write down the setting for this series.
Each item of B00 series is set to OFF in the normal state. Set to ON only when executing each item.
After execution, each item returns to OFF automatically.

Extended menu

ITEM-100 series: Operational panel parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE		DIAL					
104: AUDIO MUTING TIME		OFF					
105: REFERENCE SYSTEM ALARM		OFF					
106: CAPSTAN LOCK		SW					
107: REC INHIBIT LAMP FLASHING		OFF					
108: AUTO EE SELECT		S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD		ON					
118: KEY INHIBIT SWITCH EFFECTIVE AREA							
SUB-ITEM	REMOTE SELECT	DIS					
	CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		OFF					
120: CTL LOCK IN VAR/SHTL		ON					
122: AUTO EE WITH ANALOG TAPE		DIS					
123: TAPE INDEX SELECT		ALL					
127: CASSETTE SELECT WARNING		ON					

ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION	DECEL					
305: SYNC GRADE	ACCUR					
306: DMC INITIAL SPEED	MANUAL					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN	AUTO					
309: SERVO REFERENCE SELECT	AUTO1					
310: REC INHIBIT	ALL					
311: ANALOG AUDIO EDIT PRESET REPLACE FOR CH1	CH1					
312: ANALOG AUDIO EDIT PRESET REPLACE FOR CH2	CH2					
313: ANALOG AUDIO EDIT PRESET REPLACE FOR CH3	NO DEF					
314: ANALOG AUDIO EDIT PRESET REPLACE FOR CH4	NO DEF					
316: CONFIDENCE PB MODE	OFF					
317: AUDIO EDIT MODE	CROSS					
318: EDIT RETRY	ON					
320: DIGITAL AUDIO PB PROCESS ON EDIT POINT	FADE					

ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	CAP					
405: CUE-UP BY CTL	CAP					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					

ITEM-600 series: Time code generator parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VITC POSITION SEL-1	16H					
602: VITC POSITION SEL-2	18H					
603*1: ID CODE PRESET	OFF	–	–	–	–	–
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					

∗1: ITEM-603 has no relation with Banks.

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY		VIDEO					
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	–––					
	12: 12 line	BLANK					
	13: 13 line	BLANK					
	14: 14 line	BLANK					
	15: 15 line	BLANK					
	16: 16 line	BLANK					
	17: 17 line	BLANK					
	18: 18 line	BLANK					
	19: 19 line	BLANK					
	20: 20 line	BLANK					
704: DECODE Y/C SEP MODE							
SUB-ITEM	12: 12 line	B&W					
	13: 13 line	B&W					
	14: 14 line	B&W					
	15: 15 line	B&W					
	16: 16 line	B&W					
	17: 17 line	B&W					
	18: 18 line	B&W					
	19: 19 line	B&W					
	20: 20 line	B&W					
	21: 21 line	COMB					
	22: 22 line	COMB					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
710: INTERNAL VIDEO SIGNAL GENERATOR		CB75					
712: VIDEO PROCESS ON CAP LOCK 2FIELD		OFF					
713: VIDEO SETUP REFERENCE LEVEL							
SUB-ITEM	0: MASTER LEVEL	7.5%					
	1: INPUT LEVEL	MSTER					
	2: VBLK REMOVE CNT	THROU					
	3: BETACAM PB LEVEL	MSTER					
	4: OUTPUT LEVEL	MSTER					
714: VIDEO ADJUST RANGE		–3 ~ +3					
715: VIDEO GAIN CONTROL		800H					
716: CHROMA GAIN CONTROL		800H					
717: CHROMA PHASE CONTROL		80H					
718: SETUP LEVEL		110H					
719: SYSTEM PHASE SYNC		80					
720: SYSTEM PHASE SC		0					

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
721: Y/C DELAY		800					
723: INPUT VIDEO BLACK							
SUB-ITEM	0: All line	–––					
	12: 12 line	THROU					
	13: 13 line	THROU					
	14: 14 line	THROU					
	15: 15 line	THROU					
	16: 16 line	THROU					
	17: 17 line	THROU					
	18: 18 line	THROU					
	19: 19 line	THROU					
	20: 20 line	THROU					
726: H BLANKING WIDTH		WIDE					
727: VIDEO EDIT PREVIEW SWITCHER		INT					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
803: DIGITAL AUDIO FADE TIME	10ms					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	1 kHz (sine)					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
813: AUDIO CH3 INPUT SELECT	SW					
814: AUDIO CH4 INPUT SELECT	SW					

ITEM-900 series: Digital process parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
911: NO COMPRESSION LINE	OFF					
912: SEQUENTIAL RECORD INPUT SIGNAL	PARALLEL					

ITEM-F00 series: Adjustment use only

It is unnecessary to reset for normal operation.
Do not change setting of each item from its factory-set position.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	OFF					

For 625/50 System

The sub LCD menu and the setup menu can store the data for 525/60 and 625/50 systems independently. Then fill out the check sheets for each system, selecting system using the setup menu ITEM-013: 525/625 SYSTEM SELECT.

525/60 system : Pages A-4 to A-10
625/50 system: Pages A-11 to A-18

Some menu items in the check sheets may be added or changed depending on the ROM version. In this case, please write down notes in the margin.

Sub LCD menu

Home page

ITEM	Factory setting	Setting
AUDIO SETTING BANK	AU-1	
TIME CODE READER	AUTO	
VITC	VITCON	
VIDEO INPUT	SDI	

Audio setting page

ITEM		Factory setting	AU-1	AU- 2	AU- 3	AU-4
AU SG		OFF				
AGC		OFF				
LIMITER		OFF				
AUDIO INPUT IN-1		SDI-1				
AUDIO INPUT IN-2		SDI-2				
AUDIO INPUT IN-3		SDI-3				
AUDIO INPUT IN-4		SDI-4				
MIX/SWAP	CH-1	IN-1				
	CH-2	IN-2				
	CH-3	IN-3				
	CH-4	IN-4				
EMPH		OFF				
DOLBY		OFF				
LINE OUT		CH-1/2				
MONITOR LEVEL		FIX				
MONITOR CH	L	CH-1				
	R	CH-2				

Video setting page

ITEM		Factory setting	Setting
VIDEO	VIDEO IN	80 PRESET	
	ZEBRA	OFF	
	OUT REF	REF	
PROCESS CONTROL		PANEL	
(When the above item is set to	Y/C DLY	800 PRESET	
PANEL)	SYNC PH	80	
	SC PH	200	

General setting page

ITEM	Factory setting	Setting
SUPER	ON	
BAT-END	10.5	
BAT-NE	11.0	
BACKLGT	NORMAL	
CAPSTAN LOCK	4FD	
KEY INH	OFF	
DISPLAY	ON	

Setup menu

Note When Banks 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to write down the current menu settings first, before recalling Banks 1 to 4. Then write down the Banks' settings.

Main menu

ITEM-000 series: Operational parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001:	PREROLL TIME	5S					
002:	CHARACTER H-POSITION	12					
003:	CHARACTER V-POSITION	6A					
004:	SYNCHRONIZE	ON					
005:	DISPLAY INFORMATION SELECT	T&STA					
006:	LOCAL FUNCTION ENABLE	ST&EJ					
007:	TAPE TIMER DISPLAY	+−12H					
008:	MONITORING SELECTION FOR VTR-TO-VTR EDIT	MANU					
009:	CHARACTER TYPE	WHITE					
011:	CHARACTER V-SIZE	×1					
013*1:	525/625 SYSTEM SELECT	OFF	–	–	–	–	–
014:	SEQUENTIAL RECORD MODE	OFF					

∗1: ITEM-013 has no relation with Banks.

ITEM-B00 series: Menu bank parameter

It is unnecessary to write down the setting for this series.
Each item of B00 series is set to OFF in the normal state. Set to ON only when executing each item.
After execution, each item returns to OFF automatically.

Extended menu

ITEM-100 series: Operational panel parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE		DIAL					
104: AUDIO MUTING TIME		OFF					
105: REFERENCE SYSTEM ALARM		OFF					
106: CAPSTAN LOCK		SW					
107: REC INHIBIT LAMP FLASHING		OFF					
108: AUTO EE SELECT		S/F/R					
109: FORCED EE WHEN TAPE UNTHREAD		ON					
118: KEY INHIBIT SWITCH EFFECTIVE AREA							
SUB-ITEM	REMOTE SELECT	DIS					
	CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		OFF					
120: CTL LOCK IN VAR/SHTL		ON					
122: AUTO EE WITH ANALOG TAPE		DIS					
123: TAPE INDEX SELECT		ALL					
127: CASSETTE SELECT WARNING		ON					

ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					
202: CF FLAG REPLY	8F					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION	ACCEL					
305: SYNC GRADE	ACCUR					
306: DMC INITIAL SPEED	MANUAL					
307: AUTO-DELETION FOR INCONSISTENT DATA	MANU					
308: SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN	AUTO					
309: SERVO REFERENCE SELECT	AUTO1					
310: REC INHIBIT	ALL					
311: ANALOG AUDIO EDIT PRESET REPLACE FOR CH1	CH1					
312: ANALOG AUDIO EDIT PRESET REPLACE FOR CH2	CH2					
313: ANALOG AUDIO EDIT PRESET REPLACE FOR CH3	NO DEF					
314: ANALOG AUDIO EDIT PRESET REPLACE FOR CH4	NO DEF					
316: CONFIDENCE PB MODE	OFF					
317: AUDIO EDIT MODE	CROSS					
318: EDIT RETRY	ON					
320: DIGITAL AUDIO PB PROCESS ON EDIT POINT	FADE					

ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	CAP					
405: CUE-UP BY CTL	CAP					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					

ITEM-600 series: Time code generator parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
601: VITC POSITION SEL-1	19H					
602: VITC POSITION SEL-2	21H					
603*1: ID CODE PRESET	OFF	–	–	–	–	–
604: ID CODE SW	OFF					
605: TCG REGEN MODE	TC&UB					
606: TC OUTPUT SIGNAL IN REGEN MODE	TAPE					
607: U-BIT BINARY GROUP FLAG	000					
608: PHASE CORRECTION	OFF					
609: TCG CF FLAG	OFF					
610: REGEN CONTROL MODE	AS&IN					

*1: ITEM-603 has no relation with Banks.

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
701: SELECTION OF VIDEO DELAY/SYNC DELAY		VIDEO					
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	−−−					
	9: 9,322 line	BLANK					
	10: 10,323 line	BLANK					
	11: 11,324 line	BLANK					
	12: 12,325 line	BLANK					
	13: 13,326 line	BLANK					
	14: 14,327 line	BLANK					
	15: 15,328 line	BLANK					
	16: 16,329 line	BLANK					
	17: 17,330 line	BLANK					
	18: 18,331 line	BLANK					
	19: 19,332 line	BLANK					
	20: 20,333 line	BLANK					
	21: 21,334 line	BLANK					
	22: 22,335 line	BLANK					
	23: 23 line	HALF					
704: DECODE Y/C SEP MODE							
SUB-ITEM	9: 9,322 line	B&W					
	10: 10,323 line	B&W					
	11: 11,324 line	B&W					
	12: 12,325 line	B&W					
	13: 13,326 line	B&W					
	14: 14,327 line	B&W					
	15: 15,328 line	B&W					
	16: 16,329 line	B&W					
	17: 17,330 line	B&W					
	18: 18,331 line	B&W					
	19: 19,332 line	B&W					
	20: 20,333 line	B&W					
	21: 21,334 line	B&W					
	22: 22,335 line	B&W					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
710: INTERNAL VIDEO SIGNAL GENERATOR		CB100					

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
714: VIDEO ADJUST RANGE		–3 ~ +3					
715: VIDEO GAIN CONTROL		800H					
716: CHROMA GAIN CONTROL		800H					
717: CHROMA PHASE CONTROL		80H					
718: BLACK LEVEL		110H					
719: SYSTEM PHASE SYNC		80					
720: SYSTEM PHASE SC		0					
721: Y/C DELAY		800					
723: INPUT VIDEO BLACK							
SUB-ITEM	0: All line	–––					
	9: 9,322 line	THROU					
	10: 10,323 line	THROU					
	11: 11,324 line	THROU					
	12: 12,325 line	THROU					
	13: 13,326 line	THROU					
	14: 14,327 line	THROU					
	15: 15,328 line	THROU					
	16: 16,329 line	THROU					
	17: 17,330 line	THROU					
	18: 18,331 line	THROU					
	19: 19,332 line	THROU					
	20: 20,333 line	THROU					
	21: 21,334 line	THROU					
	22: 22,335 line	THROU					
726: H BLANKING WIDTH		WIDE					
727: VIDEO EDIT PREVIEW SWITCHER		INT					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
803: DIGITAL AUDIO FADE TIME	10ms					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	1 kHz (sine)					
810: AUDIO EDIT PREVIEW SWITCHER	INT					
813: AUDIO CH3 INPUT SELECT	SW					
814: AUDIO CH4 INPUT SELECT	SW					

ITEM-900 series: Digital process parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
911: NO COMPRESSION LINE	OFF					
912: SEQUENTIAL RECORD INPUT SIGNAL	PARALLEL					

ITEM-F00 series: Adjustment use only

It is unnecessary to reset for normal operation.
Do not change setting of each item from its factory-set position.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGENCY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	OFF					

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